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PRICE 4/-

Vol. 15, No. 1-2

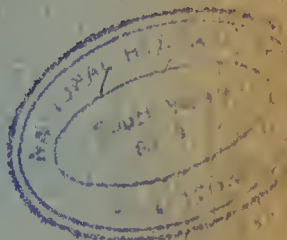
September, 1954

THE
QUEENSLAND NATURALIST

JOURNAL OF THE
QUEENSLAND NATURALISTS' CLUB

"The Poetry of Earth is never dead."—KEATS

The Author of each Article is responsible for
the statements expressed therein



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The Queensland Naturalists' Club



Official Journal—The Queensland Naturalist

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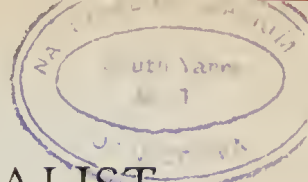
SUBSCRIPTIONS:

Ordinary Members	20s. per annum
Country Members	10s. per annum
Junior Members	10s. per annum
Joint Members (Husband & Wife)	30s. per annum

MEETINGS:

Evening Meetings are held at the Brisbane Women's Club Rooms,
148 Adelaide Street, on the third Monday of every month.

Excursions are held once a month from March to December.



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PROCEEDINGS

EVENING MEETING, 16th Feb., 1953—As the speaker arranged for the evening was unable to be present the evening was devoted to exhibits amongst which were the following: an axe from the Keilor plain, and various geological specimens (Mr. F. S. Colliver); agates and a pebble holding a bubble of water (Dr. E. O. Marks); flower and fruit of night-flowering cactus and stalked puffball (*Podaxis*) (Miss J. W. Herbert); examples of plant fasciation (Mr. A. B. Cribb); rock specimen from Taylor Ra. (Mr. T. Bake); an instrument for examining insects under the microscope (Dr. E. N. Marks); eggsac of magnificent spider (Miss E. Baird); photos of the R.A.O.U. trip to the Rockhampton district in 1924 (Mrs. Croll). Mr. C. McLellan and Mrs. W. M. Bristow were elected ordinary members of the Club.

SPECIAL MEETING, 16th March, 1953—Several amendments to the rules were discussed and passed unanimously.

EVENING MEETING, 16th March, 1953—A large number of members was present and the President reported on the excursion on 14th March to Ormiston House. The grounds were inspected and the enormous Banyan tree was of special interest. Miss MacCartney kindly provided hot water and milk for afternoon tea on the lawn and afterwards invited members to inspect the historic old home. Miss Lesbia Dobson was elected to ordinary membership. "Flora and Fauna Protection" was the title of the monthly lecture delivered by Mr. J. A. Gresty, Chief Forest Ranger. Mr. Gresty stressed the urgent need for protecting our flora and fauna and suggested that propaganda start in the schools. The following were amongst the exhibits tabled by members: the skin of a brush-tailed *Phascogale* from Kalbar, a giant wood moth, and a stag beetle (Mr. E. J. Smith); geological specimens from the Ormiston district (Dr. E. O. Marks); cactus flowers (Miss Loye); semi-precious stones both natural and polished (Mr. F. S. Colliver).

EXTRAORDINARY MEETING, 23rd. March, 1953—Dr. R. Melville, botanist in charge of the Australian collection at the Royal Botanic Gardens, Kew, delivered the C. T. White memorial lecture entitled "Some impressions of the Victorian flora."

EVENING MEETING, 20th April, 1953—The secretary reported on the excursion to Mt. Gravatt on 18th March when the ten members present had been caught in a storm early in the afternoon. Several members reported on the Easter camp at Mt. Ballow Gorge attended by thirty-four members. Perfect weather was enjoyed and a camp fire on the Saturday night was attended by fifteen of the local residents. Professor W. H. Bryan explained the geology of the area, and Mr. T. E. Hunt reported twenty-seven species of orchids from fourteen genera. Mr. F. S. Colliver told of the land shells he had found, two of the specimens not collected elsewhere on Mt. Ballow being taken from a bower bird's nest. Birds were not particularly plentiful, but Miss D. Coxon reported bell birds and lyre birds amongst the species seen. Dr. E. O. Marks told of the seventeen species of mosquitoes collected. Mrs. W. M. Bristow exhibited hanging moss and a lichen collected near Binnaburra.

EVENING MEETING, 18th May, 1953—Members reported on the excursion to Deception Bay on 4th May: Mr. S. T. Blake had found that the big stand of *Papyrus* planted by Dr. Bancroft was from Uganda and not from Egypt; a jabiru was amongst the forty-nine species of birds reported for the trip by Miss M. Hawken. Mr. F. S. Colliver reported that a specimen containing molybdenite had been found on the excursion to St. Johns Wood quarry on 16th May. Mr. Francis Ratcliffe gave a talk on his work with the Wild Life Section of C.S.I.R.O., and explained how myxomatosis was being used to control the rabbit; work was also being done with mutton birds and Ibis. Mr. E. J. Smith exhibited a number of specimens including a flat-tailed gecko, sharp-snouted snake-lizard, earth star fungus and otoliths from the head of a fish.

EVENING MEETING, 15th June, 1953—The meeting was a combined one with the National Parks Association and Royal Society of Queensland and about 400 members and friends were present. The Secretary reported that she had planted a tree in the name of the Club on the "Save the Trees Campaign" trip to Beerwah on 24th May. The monthly excursion was to Enoggera Reservoir and the President reported that a pair of Jacana and two Great Crested Grebes had been seen there. The monthly lecture was given by Mr. Crosbie Morrison who spoke on

the R.A.O.U. visit to Central Australia in 1952 and showed a colour film taken on the trip.

ANNUAL MEETING, 20th July, 1953—The 47th Annual Report and the Librarian's Report were presented and the election of officers resulted as shown on the inside of the front cover. Miss Kelly was elected to ordinary membership of the Club.

A presentation was made to Mr. W. J. Sanderson who was resigning from the position of Honorary Lanternist after thirty years. The retiring President delivered her Presidential address entitled "Horizons of Taxonomy." The following were amongst the exhibits tabled by members: fossil specimens of pines and ferns, and a photo of egg sacs of magnificent spider at Kalbar (Mr. E. J. Smith); two nature study books prepared by a young school boy (Mr. F. S. Colliver); skeleton heads of two snakes from Boonah (Mr. T. E. Hunt).

EVENING MEETING, 17th August, 1953 — The monthly excursion was to the Sherwood Arboretum and Mrs. G. Croll's garden. Professor W. H. Bryan commented on the geology of the area and Miss D. Coxon reported that not many species of birds were seen though grey fantails were numerous. Dr. Owen Jones, Director of the Seismological Station at the University of Queensland gave a lecture on "Earthquakes and Earthquake Recording." Mr. Alexander Walker, the A.B.C. bird imitator, gave a short demonstration of his remarkable skill. The following were amongst the exhibits tabled by members: head of a catfish and Burdekin plum (Mr. E. J. Smith); fossil fish from Redbank (Dr. E. O. Marks); mosquitoes and spiders (Mr. Gamble); small specimens of bore fish (Mr. N. Kelly); seed pod (Mrs. W. M. Bristow).

EVENING MEETING, 21st Sept., 1953—Mr. F. S. Colliver commented on the monthly trip which had been to the Chermerside Hills; owing to the general dry weather the excursion, though interesting, was not a good one. The meeting was devoted to the yearly wild flower display. A good selection was exhibited, and Mr. S. T. Blake identified and commented on the specimens.

EVENING MEETING, 19th Oct., 1953—Dr. E. N. Marks commented on the excursion on 17th Oct. from Thornside to Birkdale. Miss M. Holland said that the party had observed Kookaburras trying to dislodge a goanna from a tree; double-bar finches were nesting in mistletoe and numerous waders were seen at the seashore. Miss M. Holland spoke on "Some Birds of the North" mainly as seen by members of the R.A.O.U. at their recent camp-out. Miss C. Wood, Mr. C. Diatloff, and Mr. F. Kunze were

elected ordinary members of the Club. Three films were shown. The following were amongst the exhibits tabled by members: fossil Jurassic ferns (Mr. E. J. Smith); pseudobulbs of *Dendrobium speciosum* var. *hillii* (Dr. E. O. Marks); flowers from Cunningham's Gap (Mrs. W. M. Bristow); shells and seed pods from North Queensland (Miss M. Hawken).

EVENING MEETING, 16th Nov., 1953 — About fifty-seven members were present at the excursion on 15th Nov. to the Jones bee farm at Redbank Plains. The President said that Mr. Jones had explained much about the bees and that the fossil beds had been visited by most members of the party. Dr. E. N. Marks reported finding mosquito larvae of a western species in water in an old tree stump. Mr. S. T. Blake identified botanical specimens from the area, and Miss D. Coxon reported seeing friar birds and a yellow tufted honey-eater. Mr. F. S. Colliver spoke about the rich fossil beds of the area and exhibited several fossil fish. Dr. E. N. Marks exhibited specimens of various bees and spoke of their habits, and Dr. T. E. Woodward gave a lecture on "The Dance of the Bees" describing the almost unbelievable methods of communication between bees which had recently been discovered. The following were amongst the exhibits tabled by members: flexible sandstone (Miss M. Holland); fossil skeleton of eel-fish (Mr. S. Bredon); flowers (Mrs. W. M. Bristow); pictures of frogs (Miss E. Baird); gibbers from Stonehenge, Queensland (Mr. G. H. Barker); eggs of tortoise (Mr. E. J. Smith); fossil fish taken from Redbank Plains twenty years ago (Mr. A. E. Roberts); walking fern collected at Monto (Miss J. W. Herbert). Supper was served after the meeting.

ANNUAL REPORT FOR THE YEAR 1952-53

Ladies and Gentlemen,

Your Council has pleasure in submitting the 47th Annual Report.

During the year the Club has engaged in all its usual activities.

MEETINGS—There have been 10 ordinary, 1 special and 1 extraordinary meeting; 11 field excursions, and 10 council meetings.

Attendance at Council meetings were as follows: Miss M. Hawken, Mr. F. S. Colliver, 9; Miss K. Strong, Mr. K. T. Cameron, Dr. E. O. Marks, Dr. E. N. Marks, 8; Mrs. G. L. Jackson, Mr. G. H. Barker, 7; Mr. T. E. Hunt, 6; Mr. G. L. Jackson, Mr. R. Squire, 5; Mr. W. J. Sanderson,

Mr. S. T. Blake, Mr. A. B. Cribb, 3; Mr. G. Mack, 2; Mr. J. T. Woods, 1.

Mr. Mack resigned from the Council in November and Mr. G. H. Barker was appointed vice-president for the remainder of the year. Mr. J. T. Woods resigned from the editorship in November and Mr. A. B. Cribb was appointed in his place. Mr. R. Squire, Excursion Secretary, was unable to carry on towards the end of the year and an account of the excursions is therefore included in this report.

EVENING MEETINGS—These have been varied and interesting and we have had some distinguished visiting lecturers. The Club was fortunate to secure Dr. R. Melville of Royal Botanic Gardens, Kew, to deliver the second C. T. White Memorial Lecture at an extraordinary meeting in March. Illustrated talks were given by Messrs F. N. Ratcliffe, D. Wale, J. A. Gresty, and Dr. E. N. Marks. Mr. G. Mack and Dr. Stanley Roe contributed to a film evening and three meetings were devoted to exhibits. Average attendance was 50. At the final meeting of the year, the National Parks Association and Royal Society of Queensland joined us to hear Mr. Crosbie Morrison and view his film of Central Australia; about 400 were present at this meeting.

A special meeting in March passed a number of alterations to the rules of the club.

Numerous members have exhibited specimens during the year; special mention should be made of Mr. E. Smith and Mr. F. S. Colliver.

MEMBERSHIP—During the year we heard with regret of the death of Mr. C. W. Holland, a foundation member of the club and Honorary Secretary during its formative years. After ill health forced his retirement from active participation, he continued to serve the club as Honorary Auditor.

Membership of the Club comprises: Honorary, 4; Ordinary, 134; Country, 23; Junior, 1; Total, 162. During the year 13 new members were elected, 12 resigned and seven names were removed from the list.

"QUEENSLAND NATURALIST" — Two issues have been published. In a discussion of the journal at the November meeting, members decided unanimously to continue the printing of the emblem, motto and proceedings of meetings.

EXCURSIONS — Attendance at several excursions was excellent but some have been disappointing. The spread of the city has taken toll of some of our haunts but has brought others within access by public transport.

The following places were visited: July—from the top of Samford Range back to Ferny Grove; August—from Woodridge to Kuraby; September—an all day trip to Ngun Ngun, one of the Glasshouse Mountains, which was climbed by most of the party; October—Mt. Cootha Kiosk to Bardon; November—an all day trip to the West Burleigh Fauna Reserve, where Mr. David Fleay showed members his various native animals and we noted with pleasure the excellent manner in which they are cared for; March—a visit to Ormiston House and grounds at the kind invitation of Miss Maeartney; April—Mt. Gravatt; May Day—an all day trip to Deception Bay, where a jabiru was seen; May—St. John's Wood Quarry; June—Enoggera Reservoir.

EASTER CAMP—Thirty-three members and friends attended the Easter camp on Burnett Creek at the foot of Mt. Ballow, near V. Hancoek & Sons timber mill; we were pleased to have Dr. Melville with us. We are much indebted to Messrs G. and W. Fletcher, on whose property we camped, to Mr. V. Hancoek through whom we received help from the mill staff in setting up camp, and truck transport up some of the timber tracks, and also to the mill staff themselves for their assistance and thoughtfulness.

Various trips were made to the slopes of Mt. Ballow and Mt. Clunie and the area proved very interesting to all. On the Saturday evening, thirteen local people joined us at a camp fire, at which we had talks by Dr. Melville on the history of Kew Gardens, and Professor Bryan on the local geology, followed by a sing-song and supper.

SPECIAL ACTIVITIES — The club noted with pleasure the award of the Mueller Medal to Mr. H. A. Longman and at the invitation of the Royal Society of Queensland members attended the meeting at which the medal was presented to Mr. Longman on behalf of A.N.Z.A.A.S.

The club was represented on a deputation from kindred societies, organised by the National Parks Association, which interviewed an officer of the Department of Agriculture and Stock regarding suggested measures to combat the indiscriminate use of firearms.

The club wrote to the Under-Secretary, Department of Agriculture and Stock, asking for action on press reports of shooting of protected animals at Karumbah; we have been advised that appropriate action has been taken.

At the request of the Girl Guides Association, three members visited Kindalen and gave instruction on the natural history of the area.

At the request of Miss S. E. Cameron, two council members inspected an area of land near Southport which she wished to have made a reserve.

The club has asked the City Council to place an appropriate sign in the C. T. White Memorial Park.

E. N. MARKS, President.

M. HAWKEN, Hon. Secretary.

HORIZONS OF TAXONOMY
PRESIDENTIAL ADDRESS
 ELIZABETH N. MARKS

There are among the members of this club, perhaps a dozen of us whose chief interest or occupation is the taxonomy or systematics of a particular group of animals or plants—that is, the classification of a specimen down to its genus and species. If the specimen does not belong to any known genus or species, the taxonomist will describe and name it in accordance with an international set of rules.

Many people, though they can see the use of a name for a grass or mosquito which may be of economic or medical importance to man, wonder what good there is in having names for each tiny insect, shell and seaweed. As naturalists, you often ask a botanist or zoologist for the name of a specimen, and you have a far better appreciation than the average man-in-the-street of what is meant by a genus and species and of the value there is in having a name for every animal and plant. Even so, I am sure that many of you think of taxonomy as a dry-as-dust subject and wonder how anyone can find it interesting to sit down and measure the size of spores of a fungus, the angle of the veins on a leaf, the width between the eyes of a bug, or the length of a mosquito's tibia. Perhaps you think that the explanation lies in a mind that likes to have everything neatly pigeon-holed, but if you see the state of the average taxonomist's work bench, you will have doubts about that.

I should like to give you a view of the horizons of the taxonomist because it is what he glimpses, or hopes to find beyond the horizon that rewards the immediate tedium of measuring and counting. I hope to show you the relationship of taxonomy, not to man's needs or uses, but to our general knowledge of Nature and its processes, and to give you some examples of what taxonomy can draw from or contribute to other branches of science.

Our present system of classification of animals and plants was devised by Linnaeus almost 200 years ago. He

regarded the genus and species as fixed and static. Nowadays, in the light of the theory of evolution, the study of genetics, and the discovery of extensive geographical variation, the modern concept of these categories is dynamic. Thus E. Mayr defines animal species as groups of actually or potentially interbreeding natural populations, which are reproductively isolated from other such groups. The species, then, is recognised as a natural unit, not merely a convenient category for classifying museum specimens. The genus and higher categories are based on the natural phenomenon that species are not evenly distinct from one another but can be arranged in smaller or larger groups separated by smaller or larger gaps. But how many such groups are to be included in one genus or family is decided as a matter of convenience by taxonomists, and they are therefore not natural units. For instance, in mosquitoes we find it convenient to have a few large genera divided into numerous subgenera, so that each genus contains hundreds of species. Probably each subgenus of mosquitoes is equivalent to a genus in another group of animals, but they are both natural groupings.

It is generally accepted now that amongst animals, species usually evolve gradually, by small changes in isolated populations. If we think of evolution continuing all the time, it follows that we should (and do) find in nature all gradations upwards from a population that has been sufficiently isolated from the nearest members of the same species to develop a few small distinctive characters, and thus may be an incipient species. No system of names can adequately represent all the complicated interrelationships found in nature.

The spatial isolation needed for species development requires that there should be practically no interbreeding with related populations. This usually means some geographical barrier which, depending on the animal, may be for example water, mountains, desert, ice or a belt of rain forest. Where populations have been isolated for a considerable period, they may have developed marked differences, yet still be able to interbreed if the barrier between them disappears. These geographical races are often called subspecies and given a Latin name in the same manner as a species. F. E. Zeuner has estimated that a subspecies can evolve in 10,000 years and that a period of 500,000 to 1,000,000 years is required for evolution of a good species.

Zeuner studied the morphological characters of the group of birdwing butterflies *Troïlæcs*, *Ornithoptera*, and two allied genera of the family Papilionidae which occur

in southeast Asia, Malay archipelago, New Guinea, north Australia and the Solomons. They show considerable geographical variation and many subspecies are recognised. He assumed that the group had evolved in phylogenetic stages, the most recent being Stage Z. At the beginning of Stage Z each of the present day species had one form only and had not differentiated into subspecies. He grouped the most closely related species together and considered that the species of each group had evolved as subspecies during Stage Y from one earlier species. In all he traced back six phylogenetic stages to the common ancestor of the four genera, and at the same time considered the probable centres of dispersal of the groups at each stage. After that Zenner turned to the geological history of the region for an explanation of the degree of relationship of the various groups and of their present distribution.

Stage Z in which the geographical subspecies have formed is regarded as the recent post-glacial era of 10,000-20,000 years; stage Y in which the species were formed as the Pleistocene period or Ice Age of 500,000-1,000,000 yrs. During the Pleistocene periods of glaciation the sea level was 50-100 fathoms lower than today, while at periods when the ice melted it may have been 50 fathoms higher. This meant periods when migration was possible, followed by periods of isolation and will account satisfactorily for the dispersal of the butterflies during the Z and Y stages.

Correlating the earlier stages with the geological history is more complicated. The more primitive species groups of *Ornithoptera* occur in the Moluccas and Solomon Islands and appear to have by-passed New Guinea. This odd distribution can be explained by the theory of continental drift, according to which the Australian block has been drifting northward since the early Tertiary and New Guinea has been pushed in amongst the northern island chains. If New Guinea were withdrawn to the southeast and the island chains straightened out, it would bring the Moluccas sufficiently near to the Solomons to account for the early *Ornithoptera* reaching them.

On the other hand according to another entomologist, L. E. Cheesman, New Guinea was at that time connected by a land mass to Asia, and there are ancient rocks along the north coast of New Guinea and in New Britain, some of which have never been submerged.

Whoever is right, you can see that the taxonomist who wants to understand the present distribution of the group he is interested in, may have to study geological facts and theories. At the same time, geologists can use the evidence provided by taxonomists to test their theories

or supplement information obtained from rocks. I should add that the theory of continental drift, though put forward by geologists, appears to be much more acceptable to biologists who find it a satisfactory explanation for many anomalies in distribution, than it is to geophysicists who have to provide an explanation of how it came about.

Another student of butterfly systematics, E. B. Ford, became interested in the different types of pigments in the scales of butterflies' wings and decided to see what information they would give on relationships. One of the difficulties here was that if the investigation was to cover a wide range of species, museum specimens must be used. Curators of museums will very naturally only allow their specimens to be tested if they will not be damaged in any way and this is not so easy for a chemical test.

The colours from ivory to deep yellow in butterflies may be due to various pigments, one group of which are the flavones, which are obtained directly from the food plants of the caterpillars. Ford devised a simple test for flavones which could be applied to white and pale yellow colours. These pigments combine with ammonia to produce compounds of a deeper shade of yellow which in butterflies are unstable so that the specimen soon returns to its original colour. By exposing a specimen to ammonia fumes he could say, if its colour changed to a deep yellow, that flavones were present.

Up to that time flavones had only been reported in one or two instances in butterflies. Ford studied their distribution in the family *Pieridae* which includes the butterflies known as "whites" and "yellows." There are five subfamilies of *Pieridae*, one of which, the *Dismorphiinae*, is rather primitive and almost confined to Central and South America where there are 98 species. However, the genus *Leptidea*, the "wood whites," which has three species in Europe and Asia, had also been included in *Dismorphiinae* by an earlier worker, Talbot, although this seems a peculiar distribution. Ford found that all *Leptidea* had flavones and so did all species of one genus and some of the second genus of South American *Dismorphiinae*. In the other subfamilies of *Pieridae*, only two out of 233 species he examined had flavones. Thus biochemistry supported the relationships postulated on structural grounds. He was able to go further and in the genus that contained some species with flavones and some without, showed that there were correlated morphological differences and it should be split into two genera. Ford considers that chemical differences are not of any greater significance than structural differences, but provide a

useful additional character for taxonomic study.

From biochemistry let us turn to physiology as a taxonomic character. In Africa the important malaria carrying mosquito, *Anopheles gambiae* breeds in fresh water. In East Africa R. C. M. Thomson has shown that there is also a distinct form breeding in salt water. No constant distinguishing morphological characters have been found, but captured females can be identified by physiological tests on the larvae hatched from the eggs they lay. Larvae are hatched in fresh water and transferred to 75% sea water. All larvae of the salt water form survive at least six hours, while all larvae of the fresh water form are dead within two hours. This is rather a tedious way of identifying a mosquito, but by using it Thomson has been able to show that the two forms differ in behaviour and in their role in malaria transmission. Further tests on crossing the two forms are needed before it can be decided whether they are distinct species.

That sort of taxonomy has to be done on the spot. P. F. Mattingly, at the British Museum in London, has been working on another group of African mosquitoes, species of *Aedes* (subgenus *Stegomyia*). After checking many indentifications he took records from over 500 localities, for which he listed latitude, longitude, altitude and annual rainfall. Then he plotted the distribution records of one species on a map and considered it in relation to altitude and rainfall and what was known of the habits of that mosquito.

For example, by drawing boundaries marking the limits of 40 inches with three dry months per year, and 100 inches with four dry months he obtained a hypothetical distribution which agreed very well with the known distribution of *Aedes fraseri*. At the same time these boundaries suggested the possibility of its being found in certain areas for which no records exist. It is known that another species, *Aedes luteocephalus*, will not enter closed canopy forest and so in mapping its potential distribution, the big areas of equatorial forest had to be excluded.

The putative distribution of *Aedes dendrophilus* was mapped within the limits of not more than two dry months in the year. It is a species found in fringing forests in west and central Africa and there is an isolated population in southeast Africa. This suggests that it is a more ancient species than some of the others and that in the past the southern forests were much more nearly continuous with those of Central Africa than they are to-day (a hypothesis already put forward for the same reasons by workers on birds and butterflies).

As a result of this work Mattingly also showed that a climatic bridge exists between west Africa and Abyssinia which may help to explain the strong west African element in the Abyssinian fauna.

He concludes that rainfall mainly influences distribution indirectly through its effect on vegetation. This is supported by the occurrence of one species in a locality far outside the rainfall limits known for it elsewhere. In this locality there was a dense humid evergreen forest depending not on rainfall but on innumerable springs. But much careful botanical and entomological work needs to be done before the relationship of the various species of mosquitoes to their characteristic plant communities is understood. Records of seasonal occurrence, of which there are few, would also throw light on distribution.

You can imagine all the varied research needed for a study of this sort—apart from identification of specimens there would be searching through atlases, meteorological records, government reports and rainfall maps — all done by a museum taxonomist. The result is not merely knowledge of present day distribution but also evidence regarding past climates in Africa. This sort of work also indicates clearly where there are gaps in our knowledge and provides a stimulus to other workers.

In the Pacific there is a widely distributed group of mosquitoes belonging to the same subgenus, *Stegomyia*, as Mattingly is working on. This is the *Aedes scutellaris* group and members of it are found from the East Indies to Tahiti on almost all the islands that lie within the Tropics. There are certain differences, mostly rather small, between the forms that occur on different groups of islands. The taxonomist is faced with the question, are these distinct species, or are they subspecies of one widely distributed species, that could interbreed if they met on the same island, or are the differences just due to differences in environment? I tried to find an answer to the last question when I was in England. I had a colony of a Fijian form, *Aedes pseudoscutellaris* and reared the larvae at different temperatures and in 1/3 seawater and then compared the development in the adults of the characters that are used to separate the different forms. Some of the most important characters were not affected at all, and others varied a little but not to the extent they do between different forms; a couple proved to be quite variable and made one doubt their reliability as taxonomic characters. The net result supported the treatment of the different forms as distinct species. An unexpected result came out of this work, because the lack of variation in certain characters showed that specimens from Fiji and other islands that had been identified as *pseudoscutellaris* but did differ

constantly in these characters, really represented a distinct species.

The decisive way to test the status of the different members of the *scutellaris* group is by trying to cross them. There are two members in the New Hebrides, *scutellaris* and *pernotatus*. W. J. Perry tried crossing these and concluded they were distinct species. *Scutellaris* extends through New Guinea to the Philippines. A. R. Woodhill in Sydney tried crossing *scutellaris* with *pseudoscutellaris* from Fiji and found that though they mated successfully, the eggs would not hatch, thus confirming that they were distinct species. During the war a couple of specimens were collected in the Northern Territory that agreed in all respects with *scutellaris* except that they had a white stripe along the front of the mid femur, which is all black in *scutellaris*. Later on Woodhill had some specimens sent to him from Katherine and was able to establish a colony and try crossing them with *scutellaris* from New Guinea. He found that New Guinea females and Katherine males produced fertile hybrids and concluded that if the two forms were present in the same area they would interbreed and produce a population showing all degrees of intergradation, and therefore they represented two subspecies *Aedes scutellaris scutellaris* and *Aedes scutellaris katherinensis*. The cross the other way, Katherine females with New Guinea males, produced sterile eggs which showed that the two forms had diverged to some extent and Woodhill handed over his colonies to the geneticists for further study. Now if a New Guinea and an Australian race were to meet somewhere, the logical place would be on Cape York Peninsula. All the specimens collected from Torres Straits islands appear to be *scutellaris scutellaris* and so does a specimen from near Cape York. But specimens collected by J. L. Wassell in the Coen district, though they do not have a complete stripe on the midfemur, do have a few white scales or a short streak and look very like some of Woodhill's hybrids. It is an intriguing problem and these specimens can really only be identified when it is possible to establish a colony of the Coen form and try crossing it with the other two.

The examples I have given of some of the varied aspects of taxonomy have all been taken from work on insects, for which I make no apology, since that is the field I know best. But you can be certain that there are very many analogous cases amongst other animals and amongst plants.

In Australia we have a general picture of the origins of our fauna and flora. Some groups are allied to South

American forms and appear to have come in from the south, others have come in at different periods and probably by different routes from the north and frequently have near relatives in New Guinea or the East Indies. One of our members, I. M. Mackerras, has written on the origins of the different groups of Diptera.

We used to think of our mosquitoes as rather nicely divided into northern forms, which did not get much south of the Queensland border, and southern forms which rarely got north of it, though of course there were always some known to have a wide distribution. But now, due to the intensive collecting done by myxomatosis workers in the south and the Mosquito Control Committee's collections from Queensland, these ideas need adjusting. To quote one example, a species of the tropical *Aedes kochi* group has recently been found in southern Victoria.

The answer to distribution within the continent lies, I think, in the sort of work Mattingly is doing on African mosquitoes. Climate and vegetation, both past and present, have influenced the distribution of species. J. Gentili has discussed this very fully in relation to the distribution of Australian birds, which of course are much better known than other groups of animals. For such a discussion one needs accurate identifications, many locality records and also a knowledge of the ecology or natural history of a species, that is, the kind of environment in which it is usually found. We cannot learn more than a certain amount from any one group, but by each zoologist and botanist contributing his quota and the geologists adding theirs, we shall some day have a much clearer picture of how and where and why our different species originated and became distributed in the way they are.

Perhaps you will ask, where does the field naturalist come into all this? He has a very definite part to play. The taxonomist can only build on the information available. The field naturalist has trained himself to observe nature and he may see differences in the field that are not apparent in museum specimens — differences in behaviour of animals, differences in environment, such as finding a toadstool under different kinds of trees and so on; he can help by recording these things or telling the taxonomist about them. I have already pointed out that distribution of animals is bound up with vegetation and climate. It is important to have the exact locality of a specimen, and the date to indicate its seasonal distribution. But locality does not tell us all we need to know. For instance on Mt. Tamborine quite different species might be found in the rain forest and in the eucalypt forest. The natural history

notes that the field naturalist is able to provide with a specimen may be of the greatest assistance to the taxonomist. The best taxonomists are those who know their groups not only in the laboratory but in the field and therefore are also field naturalists.

THE BASKET NEST SPIDER

Saccodomus formivorus

E. J. SMITH

This spider was named by Rainbow, who gave a brief description of its nest in *Proc. Linn. Soc. N.S.W.* (1897), p. 549. The scientific name is very appropriate; it means "the ant-eating spider who lives in a bag-like house."

McKeown, in "Australian Spiders" p. 132, remarks "that it is very unfortunate that our information regarding this remarkable little spider is confined to its hunting activities only—all other details of its life are unknown to us. The nature of its egg-sac and the ways of the spiderlings, together with what must undoubtedly be fascinating particulars of its general habits await the future investigator. It is remarkable that the lobster-pot ant-traps seem to be constructed only by the full-grown, or nearly full-grown spiders. How the immature forms secure their food is as yet unknown. The male, too, has still to be discovered."

These spiders are not rare at Mt. French, near Kalbar and Boonah. I have been observing them since Dec. 26th, 1953, and have obtained specimens of their egg-sacs, and



Basket-Nest Spider and Egg-Sac

one specimen of the male spider.

My first specimens of the basket-nests were found on a small tree, badly infested with white wax scale (*Ceroplastus destructor*), upon which numerous Gravel-mound, Meat Ants (*Iridomyrmex detectus*) were coming and going.

There were two basket-nests close together, one a little above the other, on the slender twigs of the tree. I have observed since that although two nests are often found close together solitary nests are not uncommon. They are like miniature birds' nests, pocket-shaped, $\frac{3}{4}$ in. deep and $\frac{1}{2}$ in. in diameter, with a neat circular hole near the top, $\frac{1}{4}$ in. in diameter and with a hood over the hole. The nest is strengthened by some of the threads of silk (or fibre) which are thicker than the others. They are woven like basketwork, but irregularly, and are light brown or biscuit coloured.

"Let an incautious ant approach one of the Basket-Nest Spiders too closely, and in an instant it is seized and dragged within the den, where its juices are sucked from its body." (McKeown in "Aust. Spiders.")

From my observations, it appears that *Iridomyrmex detectus* is the only species of ant eaten by this spider.

The female spider is about 7 mm. long. The cephalothorax is 3 mm. long by 2.5 mm. broad by 2.5 mm. thick. Its colour, as viewed from above, is chestnut brown with a cream-coloured margin. The abdomen is almost globular, 5 mm. in diameter, cream-coloured, and has concentric rings of pitted dots. The abdomen increases in size in the egg-laying season. The spider is well hidden in the basket-nest.

The ants feed on several different kinds of scale insects and any small tree near the gravel mound nest, if it is frequented by the ants, may harbour basket-nest spiders.

In January, some of the basket-nests contained egg-sacs. The fifty or more eggs were at the bottom of the nest, and were sealed by a thin, white disc of paper-like material. I put some of these nests in a glass jar, and kept them under observation. Some spiderlings hatched out, and I found that they stayed in the egg-sac under the white disc for about a week before they left the nest.

Several days after I had put the basket-nests in the glass jar, I observed a male spider which evidently had been hiding in one of the nests. It is about as long as the female, but its abdomen is narrower. The cephalothorax is 4 mm. long by 3 mm. broad, and is amber-coloured. The oval abdomen is high in the front, 5 mm. long by 2.5 mm. broad. Its colour is brown with white markings—two

central, longitudinal lines joining one another at the front of the abdomen, and 5 slanting lines on each side pointing from the base upwards towards the front. The front legs are 10 mm. long; the 2nd and 4th pairs are not much shorter.

In February, I noticed that most of the basket-nests were deserted by the spiders; some of them contained egg-sacs.

How do the spiders find their way to trees frequented by ants? It is probable that when birds visit the trees to feed upon the ants, that the young spiders jump onto the birds' feathers, and are carried to another suitable tree.

In the accompanying drawing, the distinctive features of the spiders and nest are somewhat exaggerated.

A PROPOSED NEW GENUS OF THE FAMILY ORCHIDACEAE

T. E. HUNT

PERISTERANTHUS gen. nov. (Gk. *peristera*—a dove, and *anthus*—a flower, the flower bearing a fanciful resemblance to a dove).

Sepala petalaeque aequalia, libera, patula, crassa, incurva; sepala lateralibus ad pedem brevissimum columnae sita mentum parvum formantia. Labellum in pede columnae sessile sed mobile, saccatum, crassissimum; lobi laterales ampli, erecti; lobus medius absens; saccus callo longo conico ad basem muri antici praeditus. Columna brevis, lata, incurva. Anthera bilocularis, rostrata. Pollinia 4 inaequalia in massis 2 coalita; pedicellus latus, longus; discus amplius. Rostellum forcipatum. Stigma amplum, orbiculatum, profunde depressum.

Herba epiphytica. Caulis rigidus, flexuosus. Folia vaginantia, imbricata. Flores in racemis axillaribus dispositi bracteis minutis persistentibus.

P. hillii (F. Muell.) Hunt. Stems up to 15 cm long, rigid, flexuose, covered with the scarious remains of the bases of the fallen leaves. Leaves 5-6 distichous, membranous, flat, sheathing, imbricate, nerves prominent, oblong-lanceolate, acute, unequally bifid, 8-13 cm long. Racemes long many-flowered; bracts minute, persistent, deltoid. Flowers about 4.5 mm long, greenish richly spotted with crimson, all segments thick in texture, pedicels very short. Sepals and petals equal, ligulate

spathulate, petals slightly narrower, lateral sepal and petals more or less falcate, all segments incurved, lateral sepals attached to the very short column-foot to form a small mentum; labellum sessile but mobile on the very short column-foot; lateral lobes relatively large, erect, triangular; mid-lobe absent; sac with a long finger-like callus projecting upwards from the base of the anterior wall, spur bent forward. Column short, broad, bent forward; anther large, beaked, 2-celled; pollen masses four in two groups one mass in each group larger than the other, the larger sub-globose, the smaller somewhat flattened at the margin of contact, pedicel broad, caudicles thread-like and very elastic, the disc large, circular, generally projecting slightly between the rostellum and the beak of the anther. Rostellum foreipate. Stigma large, circular, deep, immediately below the rostellum, and, because of the bend in the column, facing almost downwards into the sac.

A fairly common epiphyte of the scrubs of Queensland and northern New South Wales.

DISCUSSION

The plant was originally described by Mueller (1) as *Saccolabium hillii* and this diagnosis was followed by both Bentham (2) and Fitzgerald (3) until Bentham (4) later removed it to *Ornithochilus* Wall. where it has since remained, although some later writers have expressed the opinion that the transfer was not a happy one. Rupp (5) gave the most recent expression of this doubt when he said, "It is extremely doubtful whether the plant described below, which is found in this State and in Queensland, belongs to *Ornithochilus* at all. Mueller, Bentham, and Fitzgerald placed it in *Saccolabium*, but Bentham subsequently removed it to *Ornithochilus*, where it must remain until its position is finally established." In his paper (6) entitled "Breaking-up of the Genus *Cleisostoma* in Australia" the same writer said, "It is generally accepted that the latter (*O. hillii*) is not a true *Ornithochilus*. Dr. Rogers informed me that the late Dr. Schlechter intended to make it the type of a new genus, to be named *Fitzgeraldiella*, which is No. 524 in Schlechter's "Systema Orchidacearum," 88, July, 1926; but no record of his transfer of the Australian plant is known." The present writer is indebted to Mr. V. S. Summerhayes of Kew for his recent corroboration of the fact that there is no evidence extant that the transfer of the Australian plant was ever effected.

Ornithochilus as defined by Hooker (7) contains

elements with are incompatible with those of the Australian plant. The differences are perhaps best shown in tabular form :—

	<i>Ornithochilus</i>	<i>P. hillii</i>
Labelium	On a long, broad claw.	Sessile.
Mid-lobe of labellum	Clawed, inflexed, lobulate and fimbriate with a velvety flap over the mouth of the short incurved spur.	There is no mid-lobe and no flap over the orifice of the spur. Spur with a large, finger-like callus rising from the base of the anterior wall.
Column-foot	Absent.	Present but very small.
Pollinia	2, sub-globose or oblong.	4 in 2 groups of 2 each.

Duthie (8) in his Key to the *Vandace* states, "Column with a very short foot; lip with a large claw, a bent spur and a 2-lobulate apical lobe, the lateral lobes fimbriate." But later in the same work he (9) alters the number of apical lobes to three and adds, "... the two lateral recurved and pectinate, the central triangular, entire or infolded; the mouth of the spur closed by two calli projecting from its back and front walls, the latter hairy."

Duthie's modification of the concept of *Ornithochilus*, although allowing for the presence of a column-foot, removes the Australian plant still further from its compass by closing the orifice of the spur with two calli, the opening in this plant being quite free of obstruction except for the projection through it of a single finger-like callus.

Ornithochilus, then, has a highly developed 2 or 3-lobulate mid-lobe to its labellum and a sac closed by anterior and posterior calli and by the reflexing of one or more apical lobes. The Australian plant has no mid-lobe whatever and an open sac containing a solitary callus.

As the many genera of the *Sarcanthinac* are separated largely on the presence or absence of a column-foot and on the formation of the labellum, and, where the latter is saccate, upon the presence, absence, or position, of calli within it, the fact that the plant under discussion varies so extensively from the accepted definition of *Ornithochilus* is, in the writer's opinion, sufficient to justify its removal from that genus.

When making the transfer from *Saccolabium* Bentham (4) gave no reasons for doing so. His first reference to the plant is in his brief discussion of the species excluded by him from *Saccolabium* and he merely states, "*Saccolabium hillii* F. Muell. is rather an *Ornithochilus*." and his

subsequent reference, which is on the next page, states only, "*Ornithochilus* Wall has two Himalayan or Burmese species, regarded by Lindley as a section of *Aerides*, but in many respects coming nearer to *Saccolabium*, and connecting our second and third series of the sub-tribe *Sarcantheae*; and the connection is still further established by *Saccolabium hillii* F. Muell. from Australia which we would add as a third species to *Ornithochilus*."

If this position be accepted the question then arises as to where the plant can be placed, and the question is made even more vexed by the fact that the sub-tribe to which it belongs consists of a large number of genera each separated from the other by small but important factors. Hooker (10) stated, "The classification of the genera of this sub-tribe presents great difficulties," and when discussing the characteristics of *Sarcanthus* and *Cleisostoma* said, "*Sarcanthus* and *Cleisostoma* are separated from *Saccolabium*, and from one another, by characters so minute and trivial, that they might well rank as sections of that genus, to which *Ornithochilus* might be added." He did include *Uncifera* and *Acampe* under *Saccolabium*. His suggestion was not adopted and by modern writers is definitely rejected. Even if the concept of *Saccolabium* were widened to include all its near allies and so form a polymorphic genus, it is doubtful if the plant under discussion could be easily fitted into it; and as it stands the position would be even more difficult. Again tabulation might show the position best:—

	Saccolabium	P. hillii
Column-foot	Absent	Present
Lat. lobes of labellum	Small	Large
Mid-lobe of labellum	Small	Absent
Sac	Without calli	With a large callus

Almost similar comparisons could be made with the remaining related genera. The shape and ornamentation of the labellum separate it from the genera grouped by Bentham (11) as Series 2, and this or the column-foot divide it from those groups as Series 1 and Series 3. There is no genus known to the writer which combines the presence of a column-foot with such a condition of the labellum and it is for this reason that it is suggested that the genus *Peristeranthus* be erected for its accommodation.

The writer wishes to express his sincere thanks to Rev. H. M. R. Rupp, of Willoughby, N.S.W., and Mr. S. T. Blake, of the Herbarium, Brisbane, for their valued assistance in the preparation of this paper.



KEY TO PLATE

A. Plant, natural size. B. Flower from front, labellum removed.
 C. Flower. D. Labellum, posterior view. E. Vertical section
 through labellum to show position, shape and relative size, of the
 callus. F. Anther lid seen from below. G. Top of column show-
 ing the anther lid raised with pollen masses **in situ**. H. One pair
 of pollen masses. I. Cross-section through the lower part of the
 sac of the labellum.

— *Peristeranthus hillii* —
 (F. Muell.) Hunt

— Del. T. E. H. — 1953.

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KEY TO THE COMMON FRESH WATER FISHES OF SOUTHERN QUEENSLAND

M. C. BLEAKLY* and E. M. GRANT*

This key has been constructed essentially for the layman. The restricted fauna dealt with (40 species) has made it possible to rely largely on gross and obvious characters, the recognition of which require little skill and no expert knowledge. Gross characters, however, are not adequate for some of the smaller species, and a hand lens is desirable for the ray counts used in the gudgeon group, and necessary for the more difficult scale count which confirms the separation of the trout gudgeon. Throughout technical terms have been avoided. Typically marine fishes which enter estuaries and may occasionally penetrate fresh waters have been excluded.

The accompanying figure, based on the giant perch, illustrates the characters and terms used. This figure also clarifies one dubious character; for the present purpose two dorsal fins are recognised only when the anterior spinous and posterior soft-rayed fins are separated by a distinct finless region of the back. In the fish figured is seen the extreme case of what is here termed a single fin with discontinuity.

Use of Key : This is best illustrated by tracing the steps followed in identifying the fish figured. In general, numbers on the right refer forward, and numbers in

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brackets on the left refer back to permit the retracing of steps.

Of the four statements in group 1, 1c—"paired fins, both pectorals and ventrals fanshaped"—fits the fish and refers forward to group 3; here 3b refers forward to 5; 5b to 13; 13b to 14; 14b to 16; 16a to 17; 17a fits the fish and determines it as *Lates calcarifer* (Bloch), the giant perch.

Whilst the greater part of this key has been compiled independently, the separation of the eels is based on Schmidt (1928), and the identification of the goby-gudgeon group is largely adapted from McCulloch and Ogilby (1919). Provisionally, the fire-tailed gudgeons have been listed as *Carassiops galii* Ogilby, with the suppression of *Carassiops klunzingeri* Ogilby, and Whitley's (1935) compression of the perchlets has been carried further in view of work in progress with the recognition of only one black-tipped perchlet—*Ambassis agassizi* Steindachner.

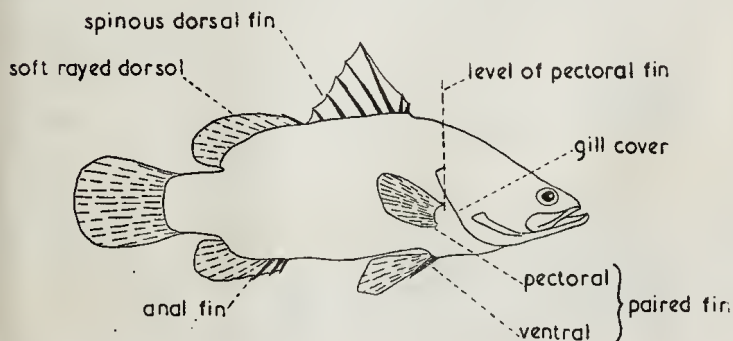
Figures of most of the fish dealt with are accessible in "The Fishes and Fish-like Animals of New South Wales" (McCulloch, 1927). No detailed list of references is attached as this would seem out of place in a paper of this nature; but the serious worker may refer to McCulloch (1929) for full references up to that date. Since 1929, though some species have disappeared in synonymy, and a few generic names have been changed, only one new fish (*Craterocephalus marjoriae* Whitley, 1948) has been described that has been identified from the region under consideration.

The authors thank Mr. G. Mack, Director of the Queensland Museum, for permission to examine types of Ambassids in the Museum collection, and Mr. Tom Marshall, Government Ichthyologist, Department of Harbours and Marine, Brisbane, for making available his collection and for checking for omission the list of fish dealt with. The need for this key was suggested by Professor W. Stephenson, Professor of Zoology, University of Queensland, whose sustained interest has been greatly appreciated.

KEY

- 1 a Paired fins, both pectoral and ventral, leaf-shaped paddles—*Neoceratodus forsteri* (Gunther): Queensland lung-fish, ceratodus.
- b. Paired fins, pectorals fan-shaped, ventrals absent—Eels, 2.
- c. Paired fins, both pectoral and ventral, fan-shaped —3.
- d. Paired fins, pectorals fan-shaped, ventrals small finger-like bodies, situated in front of pectorals—*Gadopsis marmoratus* Richardson: River blackfish.

- 2 a. Dorsal fin origin in front of vent by a distance at least equal to depth of body—**Anguilla reinhardtii** Steindachner: Long-finned eel.
- b. Dorsal fin origin ranging from behind, to not more than half body depth in front of vent—**Anguilla australis** Richardson: Short-finned eel.
- 3 a. Tail fin tapering about a tapering body—4.
- (1c) b. Tail fin fan-shaped or cleft, body ending abruptly—5.
- 4 a. Colour almost invariably mottled; surface of head between eyes without markings; diameter of eye greater than one-sixth length of head—**Tandanus tandanus** Mitchell: Fresh-water catfish.
- (3a) b. Colour rarely mottled; surface of head between eyes with longitudinal markings; diameter of eye less than one-seventh length of head—**Tandanus hyrtlii** (Steindachner): Short-finned catfish.
- 5 a. Single dorsal fin supported by fin rays, not divided into (3b) anterior spinous and posterior soft-rayed regions —6.
- b. Dorsal fin divided into anterior spinous and posterior soft-rayed regions—13.
- c. Two dorsal fins separated by an appreciable finless region, the anterior spinous, the posterior entirely or almost entirely soft-rayed—20.
- 6 a. Small fatty fin-like body behind dorsal fin —7.
- (5a) b. No trace of fatty fin-like body behind dorsal fin—8.
- 7 a. Dorsal fin between levels of pectoral and ventral fins.
- (6a) Tail deeply cleft. (Pectoral with prominent spines)—**Netuma thalassina** (Ruppell): Salmon catfish.
- b. Dorsal fin at about level of ventral fin; tail emarginate. (Fatty fin prominent)—**Salmo gairdnerii** Richardson: Rainbow trout.
- c. Dorsal fin at about level of anal fin; tail cleft. (Fatty fin small)—**Retropinna semoni** (Weber): Australian smelt.
- 8 a. Origin of dorsal fin at level of ventral fin —9.
- b. Origin of dorsal fin at level of or behind anal fin —12.
- 9 a. Dorsal fin with leading edge a saw-edged spine and (8a) without a trailing filament—Carps, 10.
- b. Dorsal fin without leading spine and with a trailing filament. (Tail deeply cleft) —11.
- 10 a. Dorsal fin with rounded margin. Scales on lateral line (9a)



- usually greater than 30 (28-35)—**Carassius carassius** (Linnaeus): Crucian carp.
- b. Dorsal fin with straight margin. Scales on lateral line usually fewer than 30 (25-30)—**Carassius auratus** (Linnaeus): Goldfish.
11. a. Anal fin low and with a relatively straight edge, lower jaw small—**Nematolosa erebi** (Gunther): Bony bream, hair-back herring.
- b. Anal fin markedly concave; lower jaw prominent—**Megalops cyprinoides** (Broussonet): Oxeye tarpon.
12. a. Dorsal and anal fin origins and terminations at same levels; pectoral fin behind upper third of gill cover. (Lower jaw a stubby beak)—**Arrhampus sclerolepis** Gunther: Short-beaked garfish.
- b. Dorsal and anal fin origins at same level, anal termination behind dorsal; pectoral fin behind lower third of gill cover—**Galaxias attenuatus** (Jenyns): Jollytail.
- c. Dorsal and anal fins terminate at same level, dorsal origin behind anal. (Tail rounded, scales large and usually spotted)—**Scleropages leichhardti** Gunther: Barramundi Dawson River salmon.
- d. Dorsal fin entirely behind anal.—**Gambusia affinis** Baird and Girard: Mosquito-fish, gambusia.
13. a. Spinous and soft-rayed portions of dorsal fin continuous (5b) and of same height. (Body dusky, not blotched)—**Therapon bidyanus** (Mitchell): Silver perch, sooty grunter, black bream, bidyana.
- b. Spinous and soft-rayed portions of dorsal fin united but with discontinuity at least of height.—14.
14. a. Body with blotched markings.—15.
- (13b) b. Body without blotched markings.—16.
15. a. Ventral fin behind root of pectoral; head and gill-cover carrying prominent spines—**Nothesthes robusta** (Gunther).
- (14b) b. Ventral fin behind root of pectoral; head and gill-cover smooth; teeth minute—**Therapon unicolor** Gunther: Spangled grunter.
- c. Ventral fin in front of pectoral root; teeth evident—**Maccullochella macquariensis** (Cuvier and Valenciennes): Murray cod.
16. a. Tail rounded.—17.
- (14b) b. Tail emarginate to deeply cleft.—18.
17. a. Spinous dorsal almost an equilateral triangle; belly silver (16a) —**Lates calcarifer** (Bloch): Giant perch.
- b. A line connecting the tips of spines of dorsal would form a smooth curve; belly yellow to gold—**Plectroplites ambiguus** (Richardson): Golden perch, yellowbelly, callop.
18. a. Ventral fin behind pectoral. Tail emarginate—**Percolates colonorum** (Gunther): Australian bass.
- (16b) b. Ventral fin in front of pectoral. Tail deeply cleft. —Perchlets, 19.
19. a. 12-13 mid-dorsal scales in front of dorsal fin—**Ambassis agassizi** Steindachner: Black-tipped perchlet.
- (18b) b. 15-17 mid-dorsal scales in front of dorsal fin—**Ambassis marianus** Gunther: Yellow perchlet.
20. a. Ventral fins at level of root of pectorals; tail rounded.—21.
- (5c) b. Ventral fins behind root of pectorals; tail emarginate to

- cleft —26.
- 21 a. Scales evident between eyes —22.
 (20a) b. No scales between eyes —25.
- 22 a. Ventral fins united in front—**Mugilogobius devisi**
 (21a) McCulloch & Ogilby : De Vis' goby.
 b. Ventral fins separate —23.
- 23 a. Second dorsal with 9 (not more than 10) rays. Gill-cover
 (22b) and body striped—**Mogurnda (Kreffti) australis**
 (Kreffti) : Striped gudgeon.
 b. Second dorsal with 11-13 rays. Gill-cover striped, body
 blotched or mottled—Trout gudgeons, 24.
- 24 a. General appearance typically dull, blotched brown on
 (23b) grey. Scale count from upper limit of gill cover to tail
 over 36—**Mogurnda mogurnda** (Richardson).
 b. General appearance typically bright, with purples, blues,
 and greens over grey. Scale count from upper limit of
 gill-cover to tail less than 36—**Mogurnda mogurnda**
adpersus (Castelnau).
- 25 a. Second dorsal fin with not more than 10 rays. (Median
 (21b) fins usually banded)—**Carassiops compressus** (Kreffti) :
 Carp gudgeon.
 b. Second dorsal fin with more than 10 rays. (Tail usually
 yellow to orange)—**Carassiops galii** Ogilby : Firetail
 gudgeon.
- 26 a. Anal fin with single leading bony spine —27.
 (20b) b. Anal fin with two or more spines —31.
- 27 a. Anal fin long, extending from level of first dorsal to hinder
 (26a) limit of second dorsal fin—**Melanotaenia nigrans**
 (Richardson) : Crimson-spotted jewel fish.
 b. Anal fin short, corresponding in size and levels with
 second dorsal fin—28.
- 28 a. Origin of second dorsal fin behind that of anal; first dorsal
 (27b) with leading edge very much longer than trailing edge.
 (White mark on nape, and commonly black mark at base
 of second dorsal)—**Pseudomugil signifer** Kner : Blue-eye.
 b. Origins of second dorsal and anal fins at same level; first
 dorsal with spines not differing greatly in length —29.
- 29 a. Body stocky, slightly compressed—**Craterocephalus**
 (28b) **marjoriae** Whitley.
 b. Body elongate and round in section —30.
- 30 a. Body showing three or more obvious interrupted black
 (29b) longitudinal lines below a prominent median lateral line
 —**Craterocephalus stercusmuscarum** (Gunther) : Spotted
 silverside.
 b. Body never showing more than one such interrupted line
 below the lateral line—**Craterocephalus fluviatilis**
 McCulloch : Silverside.
- 31 a. Body blotched. Mouth powerful and oblique, extending
 (26b) to below level of eye—**Glossamia gillii** (Steindachner) :
 Gill's percelle.
 b. Body uniformly olive-green above, silver below. Mouth
 small and weak, not reaching level of eye —32.
- 32 a. Jaw margins with minute but discernible teeth—**Mugil**
 (31b) **cephalus** Linnaeus : Hardgut mullet, sea mullet or river
 mullet.
 b. Jaw margins toothless—**Trachystoma petardi** (Castelnau) :
 Fresh water mullet.

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CAN I EAT THAT TOADSTOOL? II

J. E. C. ABERDEEN

The meanings attached to the words "toadstool" and "mushroom" vary with individuals. The tendency amongst the general populace here is to place everything other than those species closely allied to the common field mushroom in the toadstool group. On the other hand a number of technical writers use the word "mushroom" to cover all forms of the higher fungi which carry gills

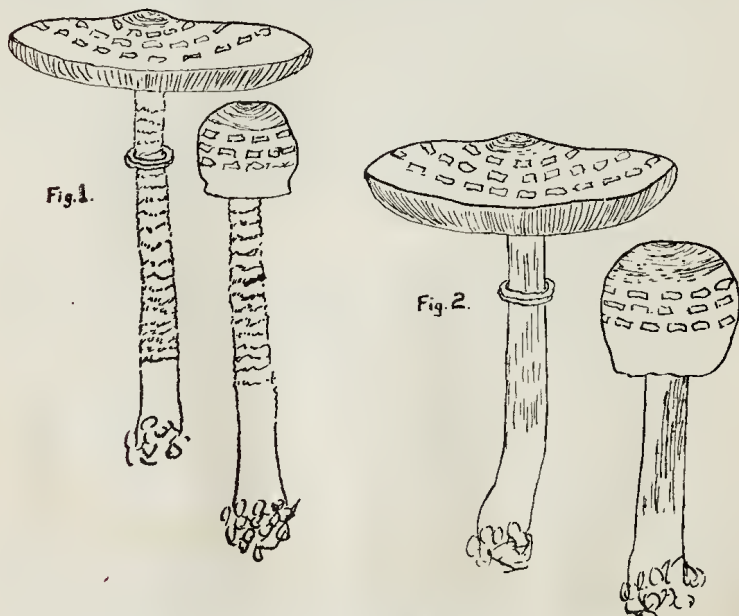


Fig. 1.—*Lepiota procera* (Fr.) S. F. Gray.
Fig. 2.—*Lepiota molybdites* (G. Meyer ex Fr.) Sacc.

on the lower side of the cap, and restrict the word "toadstool" to those known to be poisonous. If a line is to be drawn the latter suggestion is probably the better. However, in accordance with the generally accepted use in this area the word "toadstool" as used at the heading of these articles carries the former significance.

The group to be discussed in this article are all members of the genus *Lepiota*. They are as follows: *Lepiota procera* (Fr.) S. F. Gray, *Lepiota dolichaula* (B. and Br.) Sacc., *Lepiota molybdites* (G. Meyer ex Fr.) Sacc. and *Lepiota rachodes* (Vitt.) Quélet. The first three have all been recorded for Queensland, the second and third being quite common. The last mentioned is found in Victoria and cooler parts but is added because of its likeness to *L. molybdites*.

The points that characterise this group are (1) the large caps, 4-6 inches in diameter being relatively common. (2) The scaly appearance of the upper surface of the cap. (3) The gills are white, except older stages of *L. molybdites*. (4) The gills are free, i.e. not attached to the stem. (5) The spore deposit is white (except for *L. molybdites*). (6) On the upper part of the stem is a distinct ring. (7) The stem comes away from the cap with a clean break.

L. procera is known world wide as the "Parasol Mushroom" and is considered to be one of the best for eating. It has been recorded for Queensland but does not appear to be as common as the next two. Figure 1 gives a characteristic sketch of this species, reckoning that the stalk might be up to 12". The surface of the stem is brown and felty and large brown scales are present on the cap.

L. dolichaula is very similar to *L. procera* except that it is all white and the feltiness on the stem is not so distinct. It is quite common around Brisbane at least in the spring and late summer-autumn if moisture conditions are suitable. The close relationship to *L. procera* would suggest that this species is edible but evidence is meagre. One recent attempt to eat this species by two individuals resulted in one being totally unaffected and the other suffering giddiness with slight gastro-intestinal reactions some twelve hours afterwards. Both agreed that the flavour was excellent. Figure 1 can also be used to outline the form of this species, allowing for stem markings being less distinct.

Lepiota molybdites (fig 2) has been known in other countries until recently as *L. morgani*. It is generally recorded as a poisonous species, with the reservation that

some people can eat it, and that these latter reckon it to be one of the finest eating mushrooms. Recently in the Brisbane district eight individuals have eaten this mushroom after cooking in the usual way, with no ill effects and all agree that the flavour is excellent. One person eating a raw specimen was subject to severe gastro-intestinal reaction approximately three hours afterwards, but some days later suffered no reaction from a cooked specimen. We can only issue the general warning that each individual must make the experiment for himself. This species has been very common around Brisbane during the late summer and autumn of last year, and also this year, occurring in lawns and park lands. It is so large, up to 8" in diameter, and it occurs in such numbers that if edible it offers a convenient source of food to the mycophagist. It also occurs in North Queensland and appears to be a pan tropical species. The cap is similar to *L. procera* but the whole fruting body is more squat in general appearance, with a characteristically smooth stem while *L. procera* and *L. dolichaula* have a distinct feltiness associated with the surface of the stem. The obvious difference however is with the gills. These are white when young as for the other species but turn yellow-green and then a dirty green colour as the cap ages. The spores when shed are distinctly green. *L. rhacodes* is very similar to *L. molybdites* and the only reliable macroscopic character separating the two species is the colour of the spore deposit—white for the former and green for the latter. *L. rhacodes* is recorded as edible wherever it occurs.

The striking characteristic of this group is their size and it should be mentioned that at least one other species that occurs around Brisbane is equally large i.e. *Amanita verna*. This latter species is particularly poisonous but is readily distinguished by a distinct cup at the base of the stem.

PLANT COLONISATION OF THE SOUTHPORT SAND SPIT

A. B. CRIBB

Introduction

Over the past forty to fifty years there has been a northward migration of the Nerang River bar, the southern tip of Stradbroke Island being eroded away while deposition took place on the northern end of the Southport sand spit. The history of this migration has been traced by Connah (1946) and by Brooks (1953) who have shown that the northern tip of the sandspit has advanced at varying rates from a point only a few chains north of the site of the Jubilee bridge some time between 1901 and 1911 until, at the present time, with erosion of Stradbroke Island still continuing, it is located approximately two and a half miles north of the bridge. As this sand spit has been built up the bare dunes have been colonised by various plant species and it seems likely that eventually there will be developed here a vegetation similar to that which is at present being destroyed by the sea on the stabilised dunes of Stradbroke Island. For this reason it seems desirable that there should exist some short account of the vegetation currently occupying both areas.

Vegetation of the Southern Tip of Stradbroke Island

The bay side of the island is bordered by a band of mangrove forest sometimes extending inland for 100 yards. *Avicennia marina* (Forsk.) Vierh. var. *resinifera* (Forst.) Bakh. is the dominant species but scattered plants of *Bruguiera gymnorhiza* Lam., *Rhizophora mucronata* Lam. and *Aegiceras coriiculatum* Blanco also occur.

To the landward side of the mangrove forest is often developed a sward of the salt-water couch, *Sporobolus virginicus* Kunth., among which sometimes occur a few plants of *Salicornia australis* Soland. and *Suaeda maritima* Dumort. The higher parts of this sward are sometimes invaded by dense stands of *Juncus maritimus* Lam. and of *Fimbristylis ferruginea* Vahl. and beyond this, if the land rises only slightly, may be developed a forest of the paper-bark tea-tree, *McLaleuca viridiflora*.

Over many of the dunes *Banksia integrifolia* L. is the most common tree but cleared areas carry a dense cover of blady grass, *Imperata cylindrica* var. *major* (Nees) C. E. Hub. and the common braeken fern, *Pteridium aquilinum* (L.) Kuhn. often with other species such as *Acacia* sp. *Stephania hernandiaefolia* Walp., *Commelina cyanaea* R.Br., *Cymbopogon refractus* (R.Br.) A. Camus

and *Vitis opaca* F. Muell. a native grape with enormous tubers sometimes twelve to eighteen inches long which can often be seen exposed on the eroded face of the dunes at the southern extremity of the island. In one place there is a small group of the sand cypress, *Callitris columellaris* F. Muell.

The species of the more inland dunes persist to the tops of the ocean-side dunes but on the seaward slopes are gradually replaced by other species characteristic of the less stabilised sand. Here *Spinifex hirsutus* Labill. is the most common species but other species often occurring commonly are *Ipomoea pes-caprae* Roth, *Eragrostis interrupta* Beauv., *Carpobrotus aequilaterus* (Haw.) N.E. Brown, *Glycine tabacina* Benth., *Zoysia macrantha* Desv., *Euphorbia peplus* L., *Scacvola sauecolens* R. Br., and *Hibbertia volubilis* Andr. Where a low flat expanse of sand exists between the dunes and the tidal beach proper this area may be thrown into numerous hummocks by the fleshy Crucifer *Cakile maritima* Scop., which builds up the sand into a mound sometimes 1 ft. high and up to 4 ft. in diameter.

In some places the *Banksia* forest is replaced by a low dry scrub of rain-forest or semi-rain-forest species. Creepers such as *Smilax australis* R.Br., *Hoya australis* R.Br., *Geitonoplesium cymosum* A. Cunn. and *Flagellaria indica* L. frequently scramble over the sand and into low trees, and amongst the more common tree species seem to be *Cupaniopsis anacardioides* Radlk., *Halfordia kendak* Guill., *Aeronychia laevis* Forst., *Eugenia smithii* Poir., *Polyseias elegans* Harms, *Alphitonia excelsa* Reissek, *Excarpus latifolia* R.Br., *Canthium coprosmoides* F. Muell., *Maba fasciculosa* F. Muell, and *Hibiscus tiliaceus* L.

Vegetation of the Southport Sand Spit

The dunes of the Southport sand spit are as yet only partially stabilised by an incomplete ground cover and, for the most part, trees are entirely lacking.

From the road between the Jubilee Bridge and the Main Beach surfing area the dunes stretch northwards for about $2\frac{1}{2}$ miles as a narrow tongue of land, generally about 300 yards wide. Along the eastern or ocean side the dunes are raised in a steep generally undulating or irregular rampart while along the river side they are fringed for about half their length with mangroves. In between, the rolling dunes are raised to varying heights and along the centre is a series of moist hollows varying from a few yards in diameter to perhaps 100 yds. in length.

The primary coloniser on newly formed dunes is the

grass *Spinifer hirsutus* which caps the ramparts along the ocean beach and extends down the beach reaching nearly to high-tide mark. Its long, rapidly lengthening rhizomes quickly colonise newly deposited sand and it appears to be at its best when being continually buried by blown sand. The *Spinifer* is assisted in the work of early stabilisation of the dunes by another very efficient sand binder, *Oenothera drumondii* Hook. (Evening primrose.) This is a prostrate species forming a dense mat which rises as a rounded cushion as the blown sand is trapped. Like the *Spinifer*, it is at its best only when being continually buried by dry sand, but while *Spinifer* tends to preserve the more gentle contours of the dune *Oenothera* tends to throw it into rounded hummocks or mounds often several feet across. Once established it is generally more effective than *Spinifer* in maintaining the dune, and where wind erosion is taking place, the presence of *Oenothera* results in erosion into sand stacks each capped by a densely branched clump of this species.

Another early arrival on newly formed dunes is the goat's foot convolvulus, *Ipomoea pes-caprae*. The purplish stems, rooting at the nodes, can often be traced for 20 ft. or more over the sand, and though tolerant of some burying it cannot generally withstand being covered to the extent often experienced without harm by *Spinifer*. The fleshy pig-face (*Carpobrotus acquilaterus*) is a fourth species appearing fairly early on the dunes. The prostrate stems bear densely placed fleshy leaves, triangular in cross section, which often turn orange-red with age.

Where less sand movement occurs *Spinifer* and *Oenothera* are still dominant but each is much less vigorous than on more recent dunes, the *Spinifer* producing fewer rhizomes and the *Oenothera* occurring as small sparse plants rather than the large cushion-like or mat-like clumps. As well as the *Ipomoea* and *Carpobrotus* several other species occur with them on more stable dunes. Probably the most common of these is the prickly couch, *Zoysia macrantha*, but with it occur frequently *Stackhousia spathulata* Sieb., *Eragrostis interrupta* and at times, other species such as *Sonchus maritimus* L., *Scaevola suarcolens*, *Oenothera* sp., *Ischaemum triticeum* R.Br., *Oralis corniculata* L., *Carex pumila* Thunb. and *Senecio lautus* Forst.

Beside the main road at the southern end of the spit is a small group of trees, one of the few remnants of the scrub which at one time extended south as far as Surfers' Paradise about 3 miles away. The species comprising this group are *Banksia integrifolia*, *Cupaniopsis anacardioides*,

Callitris collumellaris (a single tree), and *Hibiscus tiliaceus*. From this centre buffalo grass, *Stenotaphrum secundatum* (Walt.) Kuntze, has extended over the dunes for about 20 yards, and a few stunted specimens of an *Acacia* and of *Opuntia* sp. are dotted here and there close to the road. A few low specimens of *Banksia* are extending their area northwards, the most distant of them not more than 200 yards from the road and only a foot or two high. With these more distant plants of *Banksia* is a single tree of *Pandanus pedunculatus* R.Br. These individuals together with another tree of *Pandanus* and not more than a dozen small shrubby specimens of *Banksia* scattered at generally wide intervals make up the present tree population of the dunes.

Round the margins of the hollows *Spinifex* and *Oenothera* tend to be replaced on the moister substratum by *Voysia macrantha* often with scattered clumps of *Scirpus nodosus* Rottb. and the prostrate *Lippia nodiflora* Rieh. with its cone-like inflorescence. The floors of the hollows carry a very dense cover, generally 4-12 in. high, of the sedge *Schoenus nitens* Hook. f. among which is often a ground mat of various blue-green algae such as *Scytonema* sp. Sometimes among this *Schoenus* cover there are scattered clumps or small stands of the taller *Cladium junceum* R.Br., occasional plants of *Cyperus polystachyus* Rottb. and more rarely, the fern *Cyclosorus gongyloides* Link. During autumn, the adder's tongue, *Ophioglossum vulgatum* L. and terrestrial orchids such as *Microtis* sp. can also be found in these hollows. A few low shrubby specimens of the swamp oak, *Casuarina glauca* and poorly developed plants of *Baccharis halimifolia* L. (groundsel) have become established in some hollows. Blady grass also sometimes occurs round the margins of these hollows and in some cases mingles with the *Schoenus nitens*. Some hollows, probably not at a level sufficiently low for the development of the dense *Schoenus* cover often carry small plants of *Triglochin striata* Ruiz. and Pav. with scattered clumps of *Scirpus nodosus*.

Over the wide low expanse of sand near the bar are numerous scattered hummock-forming plants of *Calile maritima* Scop. between which are poorly developed individuals of *Spinifex*.

A belt of mangroves of varying width, sometimes up to approximately 50 yards wide, borders the western side of the spit for about half its length. *Avicennia* is the dominant species but the smaller *Aegiceras corniculatum* is also common, particularly to the rear of the *Avicennia*, and the milky mangrove, *Exoccaria agallocha* L. occurs

occasionally. To the rear of these mangroves there is developed in places a band of *Casuarina glauca* sometimes with *Hibiscus tiliaceus* and over them are often found the scrambling *Wedelia biflora* DC. and the twining *Vincetoxicum carnosum* Benth. Except where the encroaching dunes abut directly on the mangroves the latter are replaced landwards by a narrow meadow of *Sporobolus virginicus*, with some *Juncus maritimus*, *Fimbristylis ferruginea*, *Salicornia australis*, *Sesuvium portulacastrum* L., and *Suaeda australis*.

At present, in spite of the vigorous growth of *Spinifex* and *Oenothera*, the dunes must be regarded as only partly stabilised and much of it subject to continual topographical change as sand is blown from one position and deposited in another. This unstable condition will probably persist until a tree cover is developed, and it appears that this cover will, at least at first, consist mainly of *Banksia integrifolia* over the dunes and *Casuarina glauca* in the hollows. Progress towards the development of a tree cover seems up to the present to have been at a slow rate and this may in part be due to the probable scarcity of propagative material. The only close source of seed is the small group of trees at the southern-most end of the spit and any other seed must be carried by wind or water over the Nerang River or by wind from occasional trees south of the spit. Once the few small individuals of *Banksia* at present established on the dunes begin to produce quantities of seed the development of a tree cover may proceed at a considerably increased rate.

Acknowledgements

The author is indebted to Mr. S. T. Blake and Mr. L. S. Smith for determination of numerous specimens, and to Professor D. A. Herbert for reading the manuscript.

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A NEW ERIA FROM NORTH QUEENSLAND

T. E. HUNT

Eria liparoides sp. nov. Rhizoma valde abbreviatum; pseudobulbi circa 15cm longi et 2.5-3cm lati, sulcati. Folia 4, oblanceolata, subacuta, circa 35cm longa et 5 cm lata, basem versus canaliculata et angustata, multinervia. Racemus circa 30cm longus, multiflorus, erectus, fusco-

tomentosus; bracteae deltoideae, persistentes, fusco-tomentosae. Flores flavi, pellucidi, tomento fusco extus praediti. Sepalum dorsale oblongum, obtusum, circa 7mm longum, marginibus incurvatis. Sepala lateralialia triangularia, obtusa, circa 8mm longa, cum pede columnae mentum obtusum breve formans. Petala elliptica, obtusa, circa 7mm longa. Labellum quam petala brevius, ad pedem columnae mobile sed sessile, trilobatum; lobi laterales ampli, erecti, marginibus anticis excurvis; lobus medius crassus, oblatus, obtusus; lamina ad basem canaliculata ad bases loborum lateralium crassissima. Columna brevissima, robusta, alba; pes columnam aequans; stigma latum, profunde depressum; alae breves albae; rostellum breve, sufflavum; pollinia alba.

Cook District: Garradunga Swamp, Victory Creek, a tributary of the Johnstone R., S. F. Goessling-St. Cloud, 11/51, flowered in cultivation at Cairns 10/53. TYPE in Brisbane Herbarium.

Pseudo-bulbs crowded, robust, about 15cm long and 2.5-3.0cm wide, furrowed, covered with the scarious remains of sheathing scales. Leaves 4, green, about 35cm long and 5cm wide, oblanceolate, sub-acute, channelled and slender towards the base, multi-nerved, mid-rib prominent. Racemes about 30cm long, many-flowered, erect, pale green, brown tomentose, flowering almost to the base; bracts deltoid, brown tomentose, persistent. Flowers pale yellow, all segments translucent; pedicels, ovaries, and the exterior surfaces of the sepals hairy. Dorsal sepal about 7mm long, oblong, obtuse, margins incurved. Lateral sepals about 8mm long, forming with the column foot a blunt spur, broad-triangular, obtuse. Petals elliptical, obtuse, about as long as the dorsal sepal. Labellum shorter than the other segments, mobile but sessile at the end of the column foot, trilobate; lateral lobes large, erect, anterior margins curved outwards and appearing from the front like two horns; mid-lobe yellow, thicker in texture than the lateral lobes, broader than long, recurved strongly to give the appearance that the labellum is bent through 90 degrees, obtuse, a small reddish-brown marking in the middle; plate depressed somewhat at the base and ornamented with two small brown spots, canaliculate above and thickened at the bases of the two lateral lobes. Column very short and stout, white; stigma broad and deep; wings short, white; rostellum short, yellowish, continued as an erect low septum across the clinandrium; pollen masses oblong, white; column foot as long as the column.

E. fitzalani F. Muel., *E. linariiflora* Rupp, *E. inornata* Hunt, and *E. liparoides* Hunt could not with any de-

gree of certainty be separated when sterile. The habits, pseudo-bulbs, and foliage are practically identical. When in flower, however, they separate quite readily. The differences are, individually, minor ones but in the aggregate they define the species adequately. *E. linariiflora* has easily the largest flowers and is the only white one. It and *E. fitzalanii* have keeled plates, the former having two keels and the latter three with two prominent calli on the mid-lobe. The labellum of *E. liparoides* is quite different from that of *E. inornata*. The latter has lateral lobes made quite distinct by deep clefts in the lamina of the labellum; in *E. liparoides* there are no such clefts and the anterior margins of the lateral lobes curve outwards and downwards to the mid-lobe in the manner of some species of *Liparis*. It is to this feature that the specific name refers. These two species can also be readily separated by the relative lengths of their column feet. In *E. inornata* the foot is twice as long as the column and in *E. liparoides* it is the same length.

Key To Plate

A. Plant, greatly reduced. B. Exploded view of flattened segments, x 2. C. Side view of flower, segments folded back to show form of labellum. D. Anther from below. E. Column and ovary from side, x 2. F. Preserved flower from side, x 2. G. Labellum from side.

(B. to G from dried material and variously enlarged.)

A RECORD OF *TRICHOPELTULA* SP. IN QUEENSLAND

A. B. CRIBB

While examining specimens epiphyllous algae from South Queensland rain forests the author came across numerous specimens which could be referred to one of the atrichous forms of what Jennings (1896) described from New Zealand as "*Phycopeltis nigra*." This species is now recognised as being a fungus, not an alga, and Jennings' name has been discarded by Santesson (1944). A specimen of the Queensland plant has been determined by Dr. E. W. Mason of the Commonwealth Mycological Institute as *Trichopeltula* sp.

The colonies appear as fine, black, irregularly branched lines on the upper leaf surface of a wide variety of rain forest species. They are typically band-like, up to 5 mm. or longer, the diameter generally irregular and within the one thallus varying from 30-150 μ . The thallus is composed of a single layer of radiating rectangular cells 3.5-7 μ long.

2-4 μ broad, 1-3 times as long as broad, showing conspicuous zonate arrangement. Occurring here and there over



Colonies of *Trichopeltula* sp., x10.

the thallus are slightly raised areas with thicker walls, each provided with a central irregular aperture. Beneath each raised area is a compact weft of hyphae in which may be embedded asci with 3-septate spores.

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REPORT OF LIBRARIAN FOR THE YEAR 1952-53

The Library has been available to all members on each General Meeting night of the year, but has not been taken advantage of to any great extent, an average of five members having used it per month.

As no new books have been purchased for some con-

siderable time, owing principally to lack of space for accommodating same, the small number of borrowers is to be expected, especially as most members themselves are subscribers to the magazines supplied by the Club.

It is recommended that a "reference library," suitable for those interested in different branches of natural history, be maintained, instead of the present set-up; any member wishing to do so, could apply for access to the Library cupboard on meeting nights to look up information required. The amount of subscriptions at present paid for "National Geographic," "Geographic," "Wild Life" and "Walkabout," could be used for additions to the Library of suitable reference books.

The Library Committee met at the home of the Librarian, where exchanges and overflows from the Library are stored, for the purpose of deciding how these could best be allocated. The list of exchanges was revised, and decisions arrived at were deferred for confirmation by Council.

Thanks are extended to the Library Committee for the help given with the many hundreds of exchanges, and also to Miss E. Baird for officiating on two General Meeting nights, when the Librarian was absent from Brisbane.

E. M. JACKSON, Librarian

HEBER ALBERT LONGMAN

Heber Longman, the scholarly dean of Queensland naturalists, passed away at his riverside home in Chelmer on February 16th, 1954. Born at Heytsbury on the edge of the Downs in Wiltshire



on June 24th, 1880, he early developed his interests in the botany, geology and archaeology of the countryside. In 1902 he came to Australia and became keenly interested in the plant life of his new surroundings. That was the time of great activity in the study of botany in Queensland, when such men as F. M. Bailey, of Brisbane and J. H. Maiden, Sydney, were stimulating the work of enthusiastic amateur naturalists. Heber Longman was an assiduous collector and student, and his extensive herbarium was

later presented to the Royal Botanic Gardens, Kew. In later years other aspects of his wide interests in natural science left him less time to devote to botany.

Perhaps there was an element of fortuity in his entry on the fields of zoology and palaeontology, where he was to win his greatest distinction. In 1911 he joined the staff of the Queensland Museum. F. M. Bailey, in his headquarters at the Botanic Gardens, dominated botany in the State, and the work at the Museum was predominantly zoological. Mr. Longman maintained his interest in plant science, as is shown by the publication of papers on such topics as the flora of Masthead Island and the flora of a single rain forest tree on Tamborine Mountain, the latter written in collaboration with C. T. White. He did not, however, undertake any of the more detailed tasks of botanical taxonomy.

In 1917 he was appointed Director of the Queensland Museum, a post he held until his retirement in 1945. Most of his publications, which amounted to more than seventy papers, were published in the Memoirs of the Queensland Museum, and outstanding amongst them were his contributions to vertebrate palaeontology. It was these that established his international reputation. Amongst the new genera he described were two dinosaurs (*Rhoetosaurus* and *Austrosaurus*), marine reptiles (*Kronosaurus* and *Cratochelone*), a fish (*Flindersichthys*) and a marsupial (*Euryzygoma*). There were, too, important contributions to the living fauna of the State. Members of the Royal Society of Queensland and the Queensland Naturalists' Club remember with pleasure the numerous occasions on which with characteristic lucidity and contagious enthusiasm he lectured on zoological and palaeontological topics. Sometimes these were under the more formal conditions of presentation of a research paper, but at most meetings he would be apt to produce an exhibit of outstanding interest. Whether the exhibit was of a newly recorded species or something of common occurrence he had the facility of arousing the keenest attention in his audience. Aboriginal skulls, native weapons, live reptiles, insects, fish, birds, Barrier Reef specimens, artifacts and fossils took on a new interest as he spoke. As he handled his specimens it was obvious that he thoroughly enjoyed sharing his pleasure in them.

Heber Longman's love of his chosen work, his erudite but simple style of lecturing, and his wide background of experience were the features of his educational work in the community. He was equally at home in talking about natural history to the school children who regularly visited the Museum, and in philosophical discussions with his academic colleagues. His interests ranged from the study of the life history of a spider to theological argument.

On his retirement from the Museum he continued his educational work by contributing a regular column on Nature's Ways to the "Courier-Mail." He lost none of that power of stimulating interest in natural history by leaving the lecturing field and reaching a wider audience through his articles. Week by week thousands of his readers followed with interest his accounts of the birds that visited his garden at Chelmer, or his essays on the wild life of Queensland.

With Mrs. Longman, who herself has served Queensland with distinction in public life, he maintained open house for a wide circle of friends and visitors to the State. Their home, set amongst

trees by the Brisbane River, was a meeting place for all the diverse interests with which they had interwoven their lives in the community.

Many honours were bestowed on Mr. Longman. He was President of the Royal Society of Queensland on two occasions, 1919 and 1939, President of the Queensland Naturalists' Club, Vice-Chairman of the Great Barrier Reef Committee and a member of the Australian National Research Council. He had been a Fellow of the Linnaean Society of London, Fellow of the Royal Anthropological Institute and Corresponding Member of the Zoological Society. In 1946 he was awarded the Australian Natural History Medallion and in 1952 the Mueller Memorial Medal of the Australian and New Zealand Association for the Advancement of

Science.

—D. A. HERBERT.

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THE QUEENSLAND NATURALIST

JOURNAL OF THE
QUEENSLAND NATURALISTS' CLUB

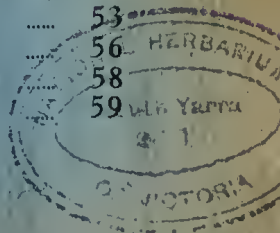
"The Poetry of Earth is never dead."—KEATS

The Author of each Article is responsible for
the statements expressed therein



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The Queensland Naturalists' Club



Official Journal—The Queensland Naturalist

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COOTHARABA LAKE AND THE WRECK OF THE "STIRLING CASTLE."

E. J. Smith.

The following short account of the rescue of Mrs. Fraser and other survivors of the "Sterling Castle" wreck has been written for members of the Queensland Naturalists' Club that they may be able, in imagination, to follow the adventures of the rescued and their rescuer, who travelled along the sea coast, and across the lakes of the selfsame territory in which the 1954 Easter Camp was situated.

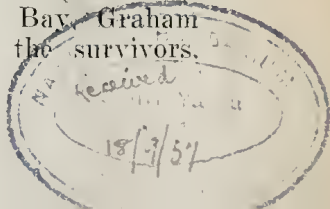
Andrew Petrie, in his Journal of an Expedition to the "Wide Bay River" in 1854 writes: "This bay or inlet [Laguna Bay] has a river in the bight [Noosa River], which forms several large lakes, or sheets of water. A few miles inland from one of these lakes, Mrs. Fraser [wife of Captain Fraser of the "Stirling Castle"] was rescued from the blacks by Bracefield [a convict who lived with the blacks] and conveyed to the boats which were anchored at the same place where we encamped" (*Tom Petrie's Reminiscences* p.262)

There are two inaccuracies in this statement. Mrs. Fraser was not rescued by Bracefield, and she was not conveyed to Laguna Bay. She was rescued by a convict John Graham, and was conveyed to the boats at Double Island Point.

Several conflicting accounts of the wreck of the "Stirling Castle" have been written. Both Stuart Russel, in *The Genesis of Queensland* and Andrew Petrie believed the story that Bracefield had told them. However, John Gibbing in *John Graham (convict)*, gives copies of official reports of the rescue of Mrs. Fraser and the survivors of the Stirling Castle wreck, namely John Graham's report to the Commandant at Moreton Bay, Lieut. Otter's report to the Commandant, the Commandant's report to the Colonial Secretary and other official documents.

These reports clearly show that Mrs. Fraser was rescued by John Graham, convict, in August, 1836, during an expedition under the command of Lieut. Otter who was the lieutenant of Commandant Captain Fyans of the fourth regiment (King's Own).

The expedition travelled in two whaleboats manned by convicts, and camped respectively at Laguna Bay and at Double Island Point. At Laguna Bay, Graham went alone and unarmed to search for the survivors.



and he brought back two young sailors. He learned from the natives, that Baxter, the second mate, was at the southernmost part of Fraser Island, and that Mrs. Fraser was near Double Island Point.

The boats then proceeded to Double Island Point, and from there Graham again went alone and unarmed, and brought back Baxter. He learned that Mrs. Fraser had been removed forty miles to the south.

Graham went in search of her, leaving blaze marks on the trees for Lieut. Otter to follow his track and to indicate where he should camp. With the help of friendly blacks he was successful in rescuing Mrs. Fraser.

He was rewarded with a ticket-of-leave, and ten pounds to start him in a new life. On his return from the expedition, he was transferred to Sydney. Apparently he became impatient, when at the end of the year he had not received his promised reward, for he drafted out a petition for pardon from which the official document was compiled. The following is an extract from Graham's rough draft:

"That from proffered Rewards and Promises from Capt. Fyans Commandant at moreton bay he volunteered to go search The mountains of the north among the Caniballs and savages, for the survivors of the Stirling Castle where the blacks had carried them with the wife of the murdered Capt. Fraser, which the had for a show . . . That on the 13th august he freed Robert Cary and Robert Demon from the Savages at Lake Fyans. That on 15th he freed John Baxter from 300 savages on McClays Island and went over 4 miles of watter on the mouth of Consk's bay for him That on The 17th of august 1836. he freed Mrs. Fraser from seven hundred Canniballs and savages who had her in the mountains (as a show) west of Cousks wide Lake Where he went and getting the tribes that claimed him as There friend to Stand by him while he claimed her as his or the (Spirit of his wife) he succeeded to take her from thoes frightful Clans—and boards of Canniballs and savages and carried her upwards of 40 miles with the assistance of 4 blacks that came with him from the mountains and by travelling all the knight he reatched the boats at wide bay on the morning of Thursday the 18th of august 1836. . . ."

Mrs. Fraser was brought over Lake Cootharaba in a bark canoe. Graham writes— "Having come to the canoes, two were brought—three in each we cross'd the lake.

On her head was a Southwester, the smell of the paint kept the Blacks from taking it. Around her loins were part of the legs and waistband of a pair of Trousers, which covered part of her thighs, wound round with Vines twenty fold as well for delicacy as the preservation of her marriage and Ear rings which she concealed under the Vines, and the only articles that were saved from those savage hands."

Lieut. Otter writes—"After walking about 25 miles [from Double Island Point] we found a mark in the sand, which had been previously agreed upon as a sign to halt. We had not been there more than half an hour when Graham appeared with four natives and gave us the gratifying intelligence that he succeeded, and that Mrs. Fraser was waiting close at hand for a cloak to cover her . . ."

Lieut. Otter was accompanied by the two corporals and the coxwain, all of whom were well armed for the purpose of rendering any assistance that might be required.

They travelled all night the twenty-five miles occasionally carrying Mrs. Fraser, and reached the boats at Double Island Point at about three o'clock the next morning.

The two men who were rescued near Laguna Bay were brought across Lake Fyans in canoes.

MOSQUITOES OF THE TEWANTIN DISTRICT

E. N. Marks.

In a previous note (1947, *Q'ld. Naturalist* 13 (3) : 54-55) fourteen species of mosquitoes were recorded from the Noosa-Tewantin area. The list for the district has now been increased to thirty species, mainly as a result of collections made during the Easter camp at Boreen Point (15-19th April, 1954), when twenty-two species were taken.

The similarity in geology and botany between this area and the southern end of Moreton Bay has been remarked upon. Twenty of twenty-eight mosquito species recorded from Dunwich (1949, *Q'ld. Naturalist* 14 (1) : 9-12) are known from the Tewantin district and the remainder may be expected to occur there also.

Mosquitoes at Boreen Point, though never encountered in large numbers were remarkable for the variety of species and for the scarcity or absence of several usually

common in this type of country. Of the species previously recorded in the district, *Aedes alternans*, *A. rubrithorax*, *A. multiplex*, *A. lineatopennis*, *A. kochi* and *Culex* sp. near *cylindricus* were not taken. The outstanding find was the small non-biting *Uranotaenia atra*, adults of which were resting above a small brackish pool among the roots of a tea tree on the edge of the lake. This species was not previously known to occur south of Townsville. *U. pygmaea* larvae were found in a tea tree swamp nearby. *Aedes funereus*, *A. vigilax*, *A. notoscriptus*, *A. gahnicola*, *Taeniorhynchus linealis*, *T. xanthogaster*, *T. uniformis*, *Culex annulirostris*, *C. sitiens* and *Anopheles annulipes* were taken biting by day in bush and the last five were also taken biting at night outside the huts. Of these only *A. funereus*, *C. annulirostris* and *C. sitiens* were at all common. Species of *Taeniorhynchus* apparently are of seasonal occurrence in South Queensland. In summer *T. linealis* are often numerous in the coastal heath country, but only a single battered specimen was taken here, probably indicating that this species' period of emergence had ended. On the other hand, *T. xanthogaster* and *T. uniformis* were more numerous and in fresh condition suggesting that emergence was still in progress.

Another species biting by day in the bush was previously recorded from Noosa and Dunwich as *Aedes similis* but now is known to be a distinct unnamed species.

A specimen of *Culex pipiens australicus* was taken indoors at night. This species, which has only recently been distinguished from *C. fatigans*, usually bites birds and may have been attracted to the light.

Around the camp *Aedes tremula* was biting, and the presence of males resting in the bathrooms suggests that it was breeding close at hand. Usually uncommon, this species occasionally finds a domestic situation ideally suited to it and breeds up in large numbers, becoming quite a serious household pest. It has a vicious bite and by reason of its small size can often enter mosquito nets; its high pitched note is quite distinctive. Its normal breeding places are tree holes, and larvae were found in one such cavity at Boreen Point, associated with those of *Aedes notoscriptus*, *Tripteroides atripes*, and *Tripteroides* sp. near *collessi*.

In grassy pools near the lake, larvae were taken of *Culex* (*Lutziä*) *halifaxi*, *C. annulirostris* and a *Culex* sp. of the *fraudatrix* group. A second *Culex* of this group was breeding in a teatree swamp, associated with *C. postspiraculosus*.

Two additional species collected at Tewantin in December are *Aedes aculeatus* and *A. vittiger*. Collections in summer and including some of the patches of rain forest in the district should add considerably to the list of mosquito species known from this area.

AN OCCURRENCE OF *ENDOGONE MACROCARPA* IN QUEENSLAND.

Joan W. Cribb.

Endogone macrocarpa Tul. is probably the most frequently observed and most variable species of the genus. It has been recorded as occurring in Europe, North America and Tasmania (listed as *E. australe* in Cooke's *Handbook of Australian Fungi*), and is here recorded from Mt. Glorious (October) and Lamington National Park (March) in S.E. Queensland. This is the second record of the genus for the Australian mainland, the other being *E. tuberculosa* Lloyd, collected in New South Wales.

Each of the Queensland collections consists of one fructification only, and both were found by the writer in



Endogone macrocarpa Tul.—1, Section of portion of gleba showing chlamydospores embedded in loose hyphal matrix, x 50; 2-4, Chlamydospores in section x 150.

the same type of habitat viz., in leaf litter in rainforest fringing country; the second collection was found associated with *Octaviania* sp. The specimens were white when fresh, drying yellowish; the gleba was yellowish, and the spores with their thick brown walls could be seen distinctly with the aid of a hand lens. The plant is quite firm, to 6 mm. diam., and though externally resembling members of the Hymenogastraceae, it is actually a Phycomyceete, closely related to *Mucor*.

E. macrocarpa is distinguished from all other species of *Endogone* by the large size of its globose chlamydospores, which, in the specimen from Lamington National Park, are up to 200 μ in diameter, with the brown endospore wall to 15 μ thick and the hyaline exospore to 8 μ thick. The Tasmanian collection and the specimen from Mt. Glorious have spores 130-170 μ diameter; European specimens show a variation of the maximum diameter 112-230 μ ; in American material, the spores are smaller, being 80-100 μ in greatest diameter. In the different collections, the hyphal matrix varies in looseness; in some it is densely compacted, so that spore-origins are not often clearly seen; in the Queensland material the matrix is quite loose, and the spore-origins correspondingly conspicuous.

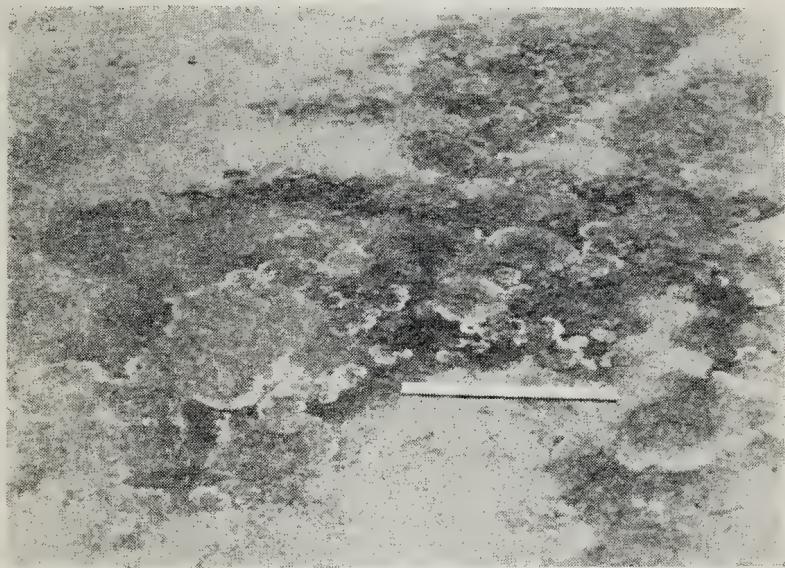
FAIRY RINGS IN COLONIES OF BLUE-GREEN ALGAE.

A. B. Cribb.

Over the period May, 1952 to Nov., 1954, the writer has had under periodic observation an extensive colony of blue-green algae developed over portion of the sand-clay surface of a tennis court at Ipswich, Queensland. This blue-green sheet is composed mainly of two species, namely, *Schizothrix arenaria* (Berk.) Gom. and *Microcoleus rupicola* (Tilden) Drouet. After rain these algae become very prominent as a bright blue-green or olive-green stratum which fades on drying.

Over this algal stratum there has appeared after each fall of rain a number of roughly circular uncolonised or very sparsely colonised patches varying from 1 cm. or less to about 30 cm. in diameter. The pale colour of these uncolonised areas contrasts very sharply with the surrounding olive-green of the algae and can be distinguished clearly at a distance of about 60 ft., though becoming almost indistinguishable after drying of the soil. In most of the larger bare circles, particularly those over 7 cm.

in diameter, there is a tendency for the algae to reappear some distance from the margin and it is not unusual to find the central area sparsely recolonised and separated from the sharply defined outer margin of the circle by a completely bare ring often no more than 1-2 cm. in width. In some of the larger circles there is a tendency towards the formation of a series of concentric rings alternately colonised and bare.



Uncolonised rings in a stratum of blue-green algae. A foot rule is in the foreground.

The occurrence over grassed areas of somewhat similar but larger "fairy-rings" is well known, and here the rings are due to the radial growth of some fungus which is generally a member of the Agaricaceae or Lycoperdaceae. However, in the case of the "fairy-rings" over the blue-green algae the causative agents were found to be Ascomycetous fungi.

After falls of rain sufficient to keep the soil moist for about three days small dark brown perithecia resembling grains of sand generally appear somewhat sparsely over the bare areas. In circles less than 5 cm. in diameter they may occur anywhere from the centre to within about 5 mm. of the margin, but in larger circles are generally restricted to a ring 1-2 cm. wide situated about 5 mm. from the outer margin. For the most part, no perithecia are found in recolonised areas within the circle.

Algal filaments at the margins of bare areas have

been examined and the effect of the fungus seems to be to cause dissociation of the cells within the common sheath without actual penetration by the fungal hyphae.

Four collections of perithecia have been made, and, rather surprisingly, these have been found to comprise two distinct species, each behaving in the same way, as far as was noted, with respect to its effect on the algal colonies and its production of fruiting bodies.

These two species have not been determined, but the following are short descriptions of perithecia and spores.

Fungus No. 1. May, 1953, Nov., 1954.—Perithecia globose, up to 300 μ diam., with an apical plane pore, superficial to $\frac{1}{2}$ embedded, membranous, dark brown, black on drying; asci cylindric-clavate, sporogenous part 50-70 \times 10-13 μ , 8-spored; spores hyaline, ellipsoid to ellipsoid-fusoid, tardily becoming 2-celled, 16-20 \times 4.5-6 μ ; paraphyses absent.

Fungus No. 2. May, 1952, Jan., 1954.—Perithecia globose, up to 300 μ diam., apical pore plane or slightly beaked, superficial to $\frac{3}{4}$ embedded, dark brown and membranous, black and almost subcarbonous on drying; asci cylindric-clavate, sporogenous part 15-22 \times 6-7.5 μ , 8-spored; spores cylindric with rounded apices, somewhat spirally twisted, 10-12 \times 1.5 μ ; paraphyses absent.

In addition to the case described above, the writer has noted the occurrence of circular bare areas accompanied by the production of fungal fruiting bodies over strata of a blue-green algae developed on a concrete step. Colonies of blue-green algae on stone walls, and in particular on the concrete floor of a glass-house also sometimes show "fairy-rings" which, though unaccompanied by fungal fruiting bodies, are presumably the result of the activities of some fungus.

This field is one which might repay further study.

NEW LOCALITY FOR PLUNKETT MALLEE (*EUCALYPTUS CURTISII* BLAKELY & WHITE)

J. R. Blake.

Plunkett Mallee (*E. curtisii*), a rare mallee-like Eucalypt, has been reported previously from two localities both in south-eastern Queensland—Plunkett, about 33 miles south-west of Brisbane, and near Mount Gravatt within the city of Brisbane.

The species is named in honour of Mr. Densil Curtis, who first drew the attention of Mr. C. T. White to the plants when the latter was collecting in the Plunkett area in 1923.

However, only fruiting specimens were available then and on a second visit in February 1929, although a good series of fruiting specimens, wood and coppice leaves were gathered, flowers were again unavailable. Mr. Curtis gathered good flowering material in November 1929, and



Eucalyptus curtisii at Belmont.

—Photo by A. A. Salmon.

this enabled a satisfactory description to be drawn up. Prior to finding flowering material it was thought that because of the peculiar nature of the seeds and the ribbed and toothed capsule that the plant could have been a *Tristania* or an *Angophora*.

The plant was later found in the western to south-western foothills of Mt. Gravatt, near Sunnybank Cemetery Reserve by Mr. C. T. White in March, 1931.

A new locality was found beside the old Cleveland Road, Belmont, near Creek Road in November, 1953. A single plant is growing within sight of the road and it is a wonder that it has not been reported before. However, the plant had been severely damaged by fire and may not have flowered for several years. Specimens were gathered by Mr. A. A. Salmon and myself within a day or two of each other and these were identified by Mr. S. T. Blake of the Government Botanist's Office. The tree flowered again profusely in 1954.

Following the flowering in 1953, several people have raised seedlings and it is to be hoped that this beautiful white-flowering gum will become one of the native shrubs in Brisbane gardens.

A NEW ORCHID FROM SOUTH QUEENSLAND

T. E. HUNT

Saccolabium virgatum sp. nov. Planta epiphytica, parvula. Folia 2-3, lineari-lanceolata, vaginantia, acuta, crassa, canaliculata, pilis simplicibus minutissimis canescentia, circa 2.7 em longa et 4 mm lata. Racemus circa 4 em longus, pauciflorus, canesens, rubidus. Pedicellus cum ovario circa 7 mm longus, rubidus. Sepala petalaeque aequalia, linearia, circa 3 mm longa, subacuta, alba marginibus et linea media coccinea. Labellum in pede columnae sessile, saccatum, crassum; lamina circa 3 mm longa et 2 mm lata, recurva, ad basem canaliculata, glandulosa, virido-flava; lobi laterales erecti, lati, acuti; lobus medius brevissimus marginibus erectis; saccus circa 2 mm longus, tenuis, ad basem extus canaliculatus, inanis. Columna circa 2 mm longa, tenuis, curva, marginibus coccineis; anthera ampla, rostrata, partim crocea partim coccinea; rostellum longissimum; stigma longum tenue; pollinia 2, sulcata.

MORETON DISTRICT: Wunburra, near Mudgeeraba; October, 1953; D. Hockings. TYPE in Queensland Herbarium, Brisbane.

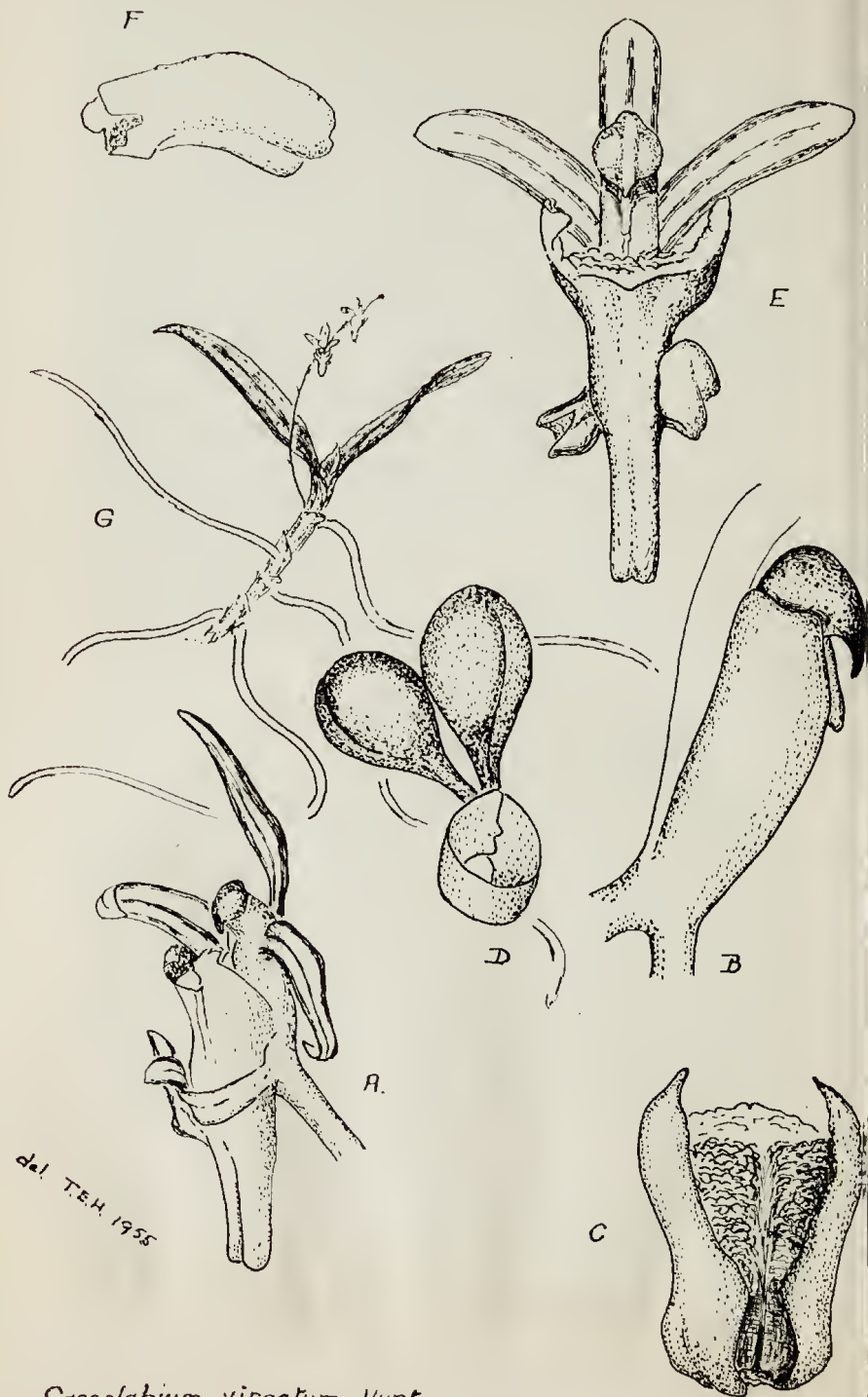
Small epiphyte. Stem short, erect. Roots few, long, white. Leaves few, linear-lanceolate, acute, curved or

twisted, dull olive green with faint crimson spots, thick in texture, channelled, lightly covered with minute simple hairs, about 2.7 cm long and 4 mm wide. Racemes few-flowered, about 4 cm long, reddish, minutely hairy, very slender at the base and thickening towards the top; bracts minute, deltoid, persistent. Pedicel and ovary about 7 mm long, crimson flushed. Flowers about 7 mm long. Sepals and petals whitish with dark crimson margins and a lighter crimson median line. Dorsal sepal linear, sub-acute, 3 mm long. Lateral sepals adnate to the base of the column, similar to the dorsal but bent forwards and upwards to embrace the free lamina of the labellum. Petals similar to the dorsal sepal, widely expanding and somewhat recurved. Labellum sessile at the base of the column, lamina 3 mm long and 2 mm wide, greenish yellow, thick in texture, recurved, channelled inside from the base almost to the base of the mid-lobe; lateral lobes erect, broad, acute; mid-lobe represented by an arc with upturned margins; plate minutely glandular; sac 2 mm long, slender, channelled outside, hollow and without ornamentation. Column 2 mm long, slender, curved, whitish, with a dark crimson margin at the top, winged, the wings in the type flower embracing the stigma; anther large, beaked, orange and crimson; rostellum very long, projecting downwards parallel with and in front of the stigma; stigma long and slender, in the type flower partially covered by the column wings; pollen masses two, sulcate, orange; pedicel ligulate.

The discovery of this plant by Mr. Hockings, of Wunburra, is of more than ordinary interest because the area is quite closely settled and has been well known botanically for very many years. Doubtless it has been passed by because of its close resemblance to the juvenile stages of some of the better known members of the *Sarcanthinae* that inhabit the area. Now that it is known it should be reasonably easy to identify in the field when not in flower because of its small size and the stiffness and thickness of its few leaves. In flower, of course, the distinctive rich crimson striping of the segments, the brilliant colour of the top of the column, and the peculiar twisting of the lateral sepals, make identification much more simple.

KEY TO PLATE

a. Flower from side; b. Column from side; c. Lamina of labellum from above; d. Pollinia; e. Flower from front; f. Lamina of labellum from side; g. Plant, life size; a. to f. Various enlarged; g. Is little more than diagrammatic as it was sketched from memory, the original plate having been unfortunately mislaid and the plant was not available for the preparation of this one.



del. T.E.H. 1955

— *Saccolabium virgatum* Hunt —

REPORT ON THE ORCHIDS OF THE SPRINGBROOK DISTRICT, EASTER, 1955.

Chas. O. Dunn.

First Day.

Along the track just after Bilborough's Falls we found a few greenhoods, *Pterostylis nutans*, in flower. We noted the tip of the hood was a deeper brown than those we were used to. The plants were even growing on the footpath where they were protected from damage by a small rock.

A little further along we came to a creek, dry in spite of the rain; quite a number of greenhoods were there in flower; noted, were some plants growing on a fallen log, apparently in process of evolution to a semi-epiphytic state.

In the creek bed itself the waters had washed away some of the gravel exposing the roots, thus enabling us to see the new tubers forming at the tips of the long roots. This vegetative process aids the colonies in extending, not only in their immediate vicinity, but also further down the creeks, as the tubers mature and are washed down.

At the same spot growing luxuriantly were a number of *Dendrobium kingianum*, the pseudo-bulbs being long with very light green leaves. It is doubtful whether they would flower profusely on account of the heavy shade.

Re-joining the road we came across a fallen tree; on the earth surrounding the turned-up roots we were intrigued by an aerial of the same species rooting profusely in the soil; this is unusual.

Coming back we noticed an odd plant of *Sarcochilus falcatus*. This very beautiful orchid is generally called 'the orange blossom orchid,' both from its appearance and delightful fragrance. Unfortunately these have been badly vandalised. Last year one of the chain stores sold a large number in flower. I venture to say in two years not one of these plants will be alive.

Making a short detour to the top of Twin Falls we found a plant of *Tacniophyllum* on a tree with the creek running only a few feet each side of the trunk. This is a leafless orchid in which the work of the leaves is carried on by the roots, which are always green.

Near the gate, was one solitary flower, passed its best, of a *Pterostylis* near to *P. acuminata*.

Second Day.

Through the courtesy of Mr. David Hockings we had the privilege of inspecting his farming property at Wunburra, at the head of the one-way traffic.

First of all we examined the cliff face on his boundary. *Dendrobium monophyllum* was in flower but mostly in bud; these were in full sun on the vertical rock face with practically no debris around the roots. I wonder if a fair percentage of their nutriment may be derived from the algae and lichens on the rocks. Nearby were *D. gracilicaule* and *D. speciosum*.

Sarcophilus ceciliae (fairy bells) were rather dwarf plants on the high cliffs. In the Taylor Range, Brisbane, *S. ceciliae* is found near the creek beds in partial shade, and here the growth and number of seedlings are more prolific.

On the very edge of the cliff we saw a plant of *Cymbidium suave* growing against the root of a *Eucalyptus*; we were told this particular plant was originally of huge size but that bush fires had destroyed most of same; fortunately it recovered sufficiently to make one new lead.

Bulbophyllum bracteatum and *B. elisae* were growing on a tree.

The terrestrial *Chiloglottis reflexa* were in large colonies but few flowers were seen.

Other orchids noted around the cliff top were *Dendrobium teretifolium*, *D. linguiforme* and *D. kingianum*.

Down on the flat near the house, growing on a hoop pine, (*Araucaria cunninghamii*) we were shown the largest *Sarcanthus tridentatus* (tangleroot) we have ever seen; this plant had eleven leads. On another hoop pine there was another tangleroot in flower; the bloom of this particular plant was green with a white labellum; normally the colour is brown and green.

On the same trees were *Sarcophilus spathulatus*, and a few very small plants of *Sarcophilus hillii*. We were told that originally there were quite a number of *S. hillii* but that some freak of the weather killed most of them.

Back on the roadside a plant of *Dipodium punctatum* had five seed pods on the one stalk.

Third Day.

Going down the right hand track to Purlingbrook Falls, on *Sloanea woolsii* (yellow carabeen) there were quite a number of seedlings of *Dendrobium teretifolium*.

Other more mature *D. teretifolium*, also *D. tetragonum* were in large numbers on the silky beech (*Villaresia moorei*). Apparently the striated bark is an ideal resting place for the very minute seeds of orchids. On the same tree were many huge bird's nest ferns (*Asplenium nidus*).

Near the foot of the falls a few plants of *Sarcophilus fitzgeraldi* were growing on a small rock. No other plants of this species, generally known as the ravine orchid, were seen at Purlingbrook.

Above Rankins Falls a small patch of *Sarcophilus eeciliae* were seen, the individual plants being small and stunted.

Nearby, were quite a number of *Dendrobium Speciosum* growing on the cliff face: these were in good condition and size. *Liparis reflexa* also was in flower.

On the return journey, close to the head of the falls amongst soil thrown into a heap by the park workmen, we found several plants of *Pterostylis longifolia* in flower.

On the other side of the falls quite a number of *Dendrobium kingianum* were growing very well.

Other orchids seen at Purlingbrook were *Cymbidium suave* and *C. iridifolium*, both being scarce, *Dendrobium aemulum*, *D. monophyllum*, *Chiloglottis reflexa*, and *Cryptostylis* sp. Nowhere could we say orchids were plentiful; rather, they were in scattered patches.

Strange to say, no sign of the small heart shaped green leaf with the purple underside belonging to the *Acianthus* were seen. These leaves are always a welcome sign for they generally denote other terrestrial orchids may be found in the immediate vicinity.

I would like to express my thanks to Messrs. David Hockings and Kevin Watford for their help in showing me many of these plants.

Summary of orchids actually seen. Easter 1955.
Chiloglottis reflexa, *Cryptostylis* sp., *Pterostylis longifolia*, *P. nutans*, *P. sp.* near to *acuminata*, *Liparis reflexa*, *Dendrobium aemulum*, *D. gracilicaule*, *D. kingianum*, *D. linguiforme*, *D. monophyllum*, *D. speciosum*, *D. teretifolium*, *D. tetragonum*, *Bulbophyllum bracteatum*, *B. elisae*, *Dipodium punctatum*, *Cymbidium suave*, *C. iridifolium*, *Sarcanthus tridentatus*, *Taeniophyllum* sp., *Sarcophilus eeciliae*, *S. falcatus*, *S. fitzgeraldi*, *S. hillii*, *S. spathulatus*.

ANNUAL REPORT FOR THE YEAR 1953-54.

Ladies and Gentlemen,

Your Council has pleasure in submitting the 48th Annual Report.

During the year the Club has engaged in all its usual activities.

MEETINGS—There have been 9 ordinary meetings 11 field excursions and 9 council meetings.

Attendance at Council meetings was as follows— Mrs. G. L. Jackson, Miss K. Strong, Miss M. Hawken, Mr. K. T. Cameron, Mr. L. S. Smith, 8; Miss M. Holland, Mr. T. E. Hunt, Mr. A. B. Cribb, Mr. S. T. Blake, 7; Dr. E. O. Marks, Dr. E. N. Marks, 6; Mr. G. H. Barker, Mr. F. S. Colliver, Mr. G. L. Jackson, 5.

Evening Meetings have been varied and interesting with an average attendance of 53. Illustrated lectures were given by Dr. O. A. Jones, Messrs. D. Vernon, J. F. Bailey and R. Greenwood, and shorter talks by Miss M. Holland, Dr. E. N. Marks, and Dr. T. E. Woodward; Mr. Alexander Walker, A.B.C. bird imitator gave a demonstration of bird calls, and films loaned by the Education Department were shown. The September meeting was devoted to wild flower exhibits, the April meeting to reports of the Easter Excursion, and in June, Mr. S. T. Blake delivered the third C. T. White Memorial Lecture.

Numerous members have exhibited specimens during the year, among the keenest being Mrs. W. M. Bristow, Mr. E. J. Smith and junior member, Stanley Breedon.

MEMBERSHIP OF THE CLUB—Membership of the Club comprises Honorary, 4; Ordinary, 139; Country, 17; Junior, 2; total 162. During the year, 14 new members were elected, 7 resigned and 6 names were removed from the list.

We heard with sorrow of the death after a long illness of Mrs. Estelle Thomson, who took an active part in the Club affairs some years ago, and was President in 1931; her flower paintings are well known. We were shocked at the tragic death of Mrs. Gifford Croll in a plane crash: members had often visited her garden at Chelmer and enjoyed her hospitality. Natural history in Queensland suffered a great loss in the passing of Mr. H. A. Longman, who was a prominent member of the Club for many years, both as councillor (he was President in 1913) and a generous contributor to the evening meetings.

"THE QUEENSLAND NATURALIST"—One issue was published in September and a double number is in the press.

EXCURSIONS—Attendances have been good. The following places were visited: July—University Grounds and Geology Department, St. Lucia; August—Carrington Rocks and Sherwood Arboretum (were pleased to note the greatly improved condition of the arboretum) with a visit to Mrs. Croll's garden and then afternoon tea provided by Mrs. Bristow in her garden; September—Cherm-side Hills; October—from Thornside to Birkdale; November—an all day trip, which 57 attended, to Mr. H. M. Jones' bee-farm at Redbank Plains (Mr. Jones kindly showed us the apiary and method of Queen-raising; fossils were collected nearby); February—an all day trip to Bishop Island; March—the Darra Cement Co.'s coral dump and clay pit at Darra; May Day—an all day trip to Upper Brookfield; May—from the top of Samford Range to Camp Mt. station; June—Enoggera Reservoir (about 50 members had a picnic lunch to farewell Mr. and Mrs. Cossar Smith who are moving to Maroochydore).

EASTER CAMP—Fifty-one members and friends attended the Easter Camp at Boreen Point. The main party were housed in Mr. Harms' holiday flats, while others camped. Trips included walks along the shores of Lake Cootharaba, a launch trip across the lake with a walk to the ocean beach to see the Teewah coloured sands, and a launch trip up to Noosa River to visit the freshwater lake; geologists in the party examined the mountains round about.

SPECIAL ACTIVITIES—Collections of native flowers were sent to the Barrier Naturalists' Club, Broken Hill, and to the Victorian Naturalists' Club for their wild-flower shows. Mr. J. F. Bailey was very helpful with material and Mr. S. T. Blake named and packed the specimens.

The Council has made representations to the appropriate authorities to prevent the shelling of Fairfax Island by the Royal Australian Navy, to prevent the removal of coral and shells from Green Island to prevent encroachment on the Sandgate lagoons, to ensure preservation of the Bora ring at Burleigh, and of the Leichhardt tree on the Comet River, and to have a suitable nameplate placed in the C. T. White Memorial Park (we are glad to note this was erected in February).

At the invitation of the University of Queensland Science Students' Association, two members attended the Association's camp at Kilcoy Creek.

Mrs. G. L. Jackson has continued to act as the Club's delegate on the Save the Trees Campaign Committee and

Miss M. Holland was appointed as delegate to the International Bird Preservation Committee (Australian Branch).

The Club was represented at a Public Meeting which decided to establish a memorial to the late Arthur Groom, whose work for nature conservation is well known.

GENERAL—The Council has purchased a reconditioned typewriter to facilitate the work of the Hon. Secretary.

We were glad to see the new Fauna Protection Act proclaimed.

In July, the President was interviewed on Station ABC's Radio News Reel and spoke about the aims and activities of the Club.

Back numbers of overseas Scientific Journals received in exchange, were presented to the University. Several additional exchanges of journals have been arranged with overseas institutions.

Cessation of publication of "Wild Life" is greatly regretted.

We congratulate the Toowoomba Field Naturalists' Club on their production "The Darling Down Naturalist."

We have been pleased to welcome several overseas visitors at meetings and excursions during the year.

T. E. Hunt, President.

M. Hawken, Hon. Secretary.

REPORT OF LIBRARIAN FOR THE YEAR 1953-54.

During the year the Library Committee has met with the object of checking up on accumulations of literature received in exchange for the Queensland Naturalist. As storage space for these publications is limited, all those deemed to be of limited use to the Club, but of definite value to the University and various Scientific bodies were inspected and removed for distribution to those interested.

The books in the library cupboard housed in this building are to be sorted, and those considered valuable as reference books only are to be retained. It is hoped, that with a few necessary additions, the nucleus of a reliable reference library for the use of members will be formed.

All Australian publications received in exchange are being retained, and are stored in a cupboard kept at the home of the Librarian.

E. M. Jackson, Hon. Librarian.

PROCEEDINGS.

EVENING MEETING, 15th Feb., 1954—Members reported on the excursion to Bishop Island on 14th Feb.; Mr. T. E. Hunt had noted an orchid which was particularly interesting as Bishop Island was man-made; Mr. L. S. Smith reported 23 native and 35 naturalised alien plants on the Island in addition to those previously recorded; Miss M. Hawken listed 17 species of birds seen on the excursion, the mangrove honeyeater being the most conspicuous. Mr. Vernon of the Queensland Museum gave the evening lecture on his trip with the Archbold expedition to Cape York, and exhibited several specimens of birds and animals collected on the expedition. Miss Crombes and Mr. S. Brendon were elected members of the Club. The following were amongst the exhibits tabled:—fossil crabs and giant snail—Mr. F. S. Colliver; basket-nest spiders—Mr. E. J. Smith; fruit of *Xylomelum pyriformis* and skeletal wood of a bottle tree—Mrs. W. M. Bristow; the fungus *Sphacrobolus*—Mrs. A. B. Cribb.

EVENING MEETING, 22nd March, 1954—Deep regret was expressed at the death of two members, Mr. Heber Longman and Mrs. G. Croll. Professor D. A. Herbert spoke of the work of Mr. Longman who was a former director of the Queensland Museum, and members stood in silence for a moment as a mark of respect. Miss M. Davies was elected to membership of the Club. Professor W. H. Bryan spoke on the excursion to the coral dump of the Darra cement works and mentioned interesting features of the clay beds adjacent to the works. Professor J. W. Wells, a visiting Fulbright scholar from U.S.A., stated that there were nine living species of coral in Moreton Bay but that the dredgings contained species extinct in Moreton Bay but still living in other areas. The evening lecture was delivered by Mr. J. F. Bailey, Curator of the Botanic Gardens, who showed coloured slides of many of the beautiful native plants in cultivation. The following were amongst the exhibits tabled by members—shells from the coral dump and fossil leaves from the clay pit—Mrs. G. L. Jackson; grasses and butterfly chrysalis—Mrs. W. M. Bristow; three juvenile brown snakes—Mr. E. J. Smith; fossil leaves from the Darra clay pit—Mrs. E. O. Marks; corals from Moreton Bay—Professor J. W. Wells; butterfly pupa—Mr. F. Kunze; coral and shells from Darra—Dr. E. O. Marks; hoop pine Buprestid beetle and mosquitoes from Darra—Dr. E. N. Marks; seed pod of native wistaria—Mr. C. O. Dunn.

EVENING MEETING, 21st April, 1954—Reports on the Easter Camp to Boreen Point on Lake Cootharaba were given by members; Mr. L. S. Smith described the vegetation and stated that a list of approximately 280 species had been drawn up; Mrs. G. L. Jackson spoke on and displayed shells found in the area; Miss D. Coxon reported a Jabiru amongst the 64 species of birds listed; Dr. E. N. Marks spoke on the mosquitoes at Boreen Point, 22 species being collected; Dr. Marks also reported the scale insect *Saissetia hemisphaerica* collected on *Erratamia angustisepala*, a new host-plant record; Professor W. H. Bryan displayed a map of the camp area. Mr. and Mrs. A. Patrick and Mrs. M. Henderson were elected to ordinary membership of the Club. Amongst the exhibits tabled by members were the following: a wood destroying fungus—Mr. T. E. Hunt; an insect—Miss Beth Smith; various books—Mr. G. H. Barker.

EVENING MEETING, 17th May, 1954—Members reported on the excursions to Upper Brookfield on 3rd May, and from the top of Samford Range to Camp Mountain railway station on 15th May; Miss D. Coxon mentioned the large flock of rainbow birds and Mr. E. J. Smith reported a specimen of the grape fern, *Botrychium ternatum*, collected near the granite quarry. Miss M. Fortiscue was elected to ordinary membership of the Club. Mr. R. Greenwood of the Queensland University delivered a lecture on "Maps through the ages and to-day," and displayed various types of maps. The following were amongst the exhibits tabled by members:—stick insect—Miss M. Holland; hawk moth and egg-case of golden web spider—Mr. E. J. Smith; pelican egg—Miss Hawken.

EVENING MEETING, 21st June, 1954—Miss M. Holland and Dr. E. N. Marks reported on the outing to Enoggera Reservoir when Mr. and Mrs. Cossar Smith were farewelled by members. The C. T. White lecture entitled "Some features of grasses and grasslands in Queensland" was delivered by Mr. S. T. Blake. Miss F. Dunbar and Mrs. Spooner were elected ordinary members of the Club. Mr. E. J. Smith exhibited a red-backed spider, centipede, and two species of scorpion.

EVENING MEETING, 19th July, 1954—The 48th Annual Report, the Annual Financial Statement, the Librarian's Report, and the report of the delegate to the "Save the Trees Campaign" were read and accepted. Mr. S. Everist and Mr. I. B. Cribb were elected to membership of the Club. Members reported on the walk from Birkdale to Thornside on 17th July. The election of officers and

council for the year 1954-55 resulted as shown on the inside front cover. As the retiring President, Mr. T. E. Hunt, was unable to be present to deliver the Presidential address, Dr. E. N. Marks spoke on and showed coloured slides of the western islands of Torres Strait. Specimens from the excursion tabled by members included the following:—stages in germination of seeds of *Micennia* and leaves of *Aegiceras* with adhaerent barnacles—Mrs. W. M. Bristow; a cane toad, arc shell, and eel-grass—Mr. E. J. Smith; fiddler crabs, the male of the species with one characteristically enlarged claw—Dr. E. N. Marks.

OMISSION.—The block of the plate of Mr. Heber Longman which appeared in Vol. 15, No. 1-2 of this journal was by courtesy of "The Courier-Mail", Brisbane. It is regretted that acknowledgment was not made in the appropriate place.—Ed.

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PRICE 6/-

Vol. 15, No. 4 - 6

DECEMBER, 1956



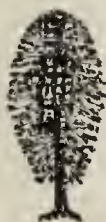
THE

QUEENSLAND NATURALIST

JOURNAL OF THE
QUEENSLAND NATURALISTS' CLUB

"The Poetry of Earth is never dead."—KEATS

The Author of each Article is responsible for
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FIFTIETH ANNIVERSARY ISSUE

1906 - 1956

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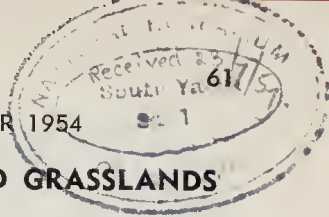
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MEETINGS:

Evening Meetings are held at the Brisbane Women's Club Rooms, 148 Adelaide Street, Brisbane, on the third Monday of every month. Excursions are held once a month from March to December.



SOME FEATURES OF THE GRASSES AND GRASSLANDS OF QUEENSLAND

S. T. Blake

The C. T. White Memorial Lecture was instituted to commemorate a man who devoted a great part of his life to one phase or another of Natural History. An outstanding botanist, he was an active member of the Queensland Naturalists' Club from his youth and we remember him for his humanity, his friendliness, and his readiness to pass on to any enquirer the abundant knowledge acquired from a lifetime's love and study of plants. Mr. White was interested in all plants but especially so in woody plants and grasses, the latter chiefly for their economic value. Through his influence, Mr. C. E. Hubbard, of the Royal Botanic Gardens, Kew, and now the world's leading authority on grasses, spent about a year in Queensland in 1930-1 studying and collecting grasses. This visit had a profound influence on botany in Queensland and on my own career. I was a university student at the time, becoming interested in plant classification. After meeting Mr. White and Mr. Hubbard the interest became a passion, especially for grasses and the related family of the sedges, a passion encouraged by Mr. White then and later when I was engaged on research work, and from 1942 as a member of his staff.

The grass family is one of the largest and most widely spread families of flowering plants and is the most numerous in individuals. About 6,500 species are known, of which more than 500 are so far known in Queensland. Of all the plants of the earth the grasses are the most useful to mankind. They include the cereals, sugar-cane, sorghum and the bamboos, and provide the bulk of the forage for domestic animals. In the last-mentioned category they are the basis for the greater part of Australia's national income. Directly or indirectly they furnish the greater part of our food and much of our clothing. We are all familiar with grass lawns and playing fields. In some part of the world certain grasses are used in paper-making, while others, such as lemon grass and citronella grass, furnish essential oils used in perfumery, soap-making, cordial manufacture, and other industries. The largest of all grasses, the bamboos, are of vast importance in the Indo-Malayan region where they are used in building, for waterpipes, carrying vessels and many other purposes. Straw brooms are made from the seed-heads of broom millet. Starch and alcohol are obtained from the grain of some cereals. Grasses are commonly used to stabilize banks and control soil erosion.

The general features of grasses are fairly well known but relatively few people ever examine a grass in detail. A grass plant in flower has quite a complicated structure. Like most flowering plants, a grass has roots, a stem, and leaves below the flowering portion. The stem has one or more joints or nodes and is usually more or less cylindrical; sometimes there are also creeping underground stems without true leaves from which leafy stems arise. Each leaf consists of three parts; the uppermost part is the obvious part known as the blade and the lowermost part or sheath is wrapped around the stem. Where blade and sheath meet is the ligule which usually takes the form of a small membrane or a line of hairs. Each flower is very small and enclosed by a pair of scales called the lemma and palea, the whole comprising a floret. What is popularly thought to be the flower is really a spikelet consisting of usually two scale-like glumes surrounding the base of a floret or group of florets. The spikelets are often very numerous and there are many different arrangements of them in the seed-head or inflorescence. The fruit is called a grain or caryopsis; the seed-coat is completely attached to the inside of the fruit. When the grain is mature the spikelet falls away with it, or the florets may fall separately or in groups leaving the glumes behind. In

popular language, the part that falls is called the "seed." In many groups of grasses, this "seed" has a sharp point at the base, barbed with short hairs. Grasses with such "seeds" are often called "spear-grasses," because the seed may pierce clothing and flesh. The number of florets in each spikelet, the arrangement of the spikelets, the texture and shape of the glumes and lemmas and the number and arrangement of their veins, details in the structure of the grain and the way it is shed, all vary considerably and provide many of the characters for discriminating the species and for classifying the family as a whole.

Species and genera are the basic units of classification and nomenclature in biology, but these units are less tangible and less readily comprehended than the units of length or weight. Usually there is no doubt about what constitutes an individual animal or plant, but there are many plants like couch grass that produce underground parts from which arise conspicuous aerial parts: it is not easy to be sure whether different aerial shoots belong to different individual plants or not. A species, broadly speaking, is a *kind* of plant, made up of a large number of individuals, resembling one another more closely than they do other individuals. A genus may be described as a group of species each of which resembles the others more closely than other species outside the group. Each genus has its own particular name and the name of a species is formed by adding a qualifying word (specific epithet) to the generic name. The naming of plants is governed by an internationally accepted series of rules, the International Code of Botanical Nomenclature.

The grasses are usually considered to be an especially difficult family to classify, and in spite of the work of many able botanists during the past two hundred years, a great deal still remains to be done in this field. There is still lack of agreement as to the limits of many genera. While it is possible for an ordinarily keen observer to learn to discriminate most of the grasses in his neighbourhood, it is a much more difficult problem to discriminate and classify the grasses of a large area such as Queensland. Anyone wishing to do so has to ignore geographical boundaries and pursue his studies wherever his plants lead him until the grasses of a continent and then of even wider regions must be admitted to his acquaintance. Fortunately, a large proportion of grasses can be well represented by ordinary herbarium specimens so that wide and intensive studies of many features can be made from a good collection of dried specimens. The ease with which the seed-heads of some groups of species break up make preparation of good dried specimens of these a difficult matter.

The foundations of our knowledge of Queensland grasses were the collections of Banks and Solander in 1770 and Robert Brown in 1802. Banks and Solander, naturalists with Captain Cook in the "Endeavour", landed at a few places along the Queensland coast, but so far as I can find, nearly all the grasses were collected near the mouth of the Endeavour River, where Cooktown now stands. They spent six weeks there in July-August, an unfavourable time for collecting grasses. In all, about thirty grasses were collected in what is now Queensland. However, various circumstances delayed publication of their findings and it remained for Robert Brown to make public the results of their work in conjunction with his own. Brown was naturalist on the "Investigator" during Matthew Flinders's survey of the southern, eastern, and part of the northern shores of Australia. He collected at several places along the Queensland coast and nearby islands between Sandy Cape and the mouth of the Pioneer River, some of the islands in Tarres Strait, most of the islands of the Wellesley Group in the Gulf of Carpentaria and very briefly at one or two points on the eastern shores of this gulf. Many grasses were collected west of the Queensland border that have since been found east of it. Part of the botanical results of this exploration was published in 1810 in his *Prodromus Florae Novae Hollandiae* and the broad classification of grasses worked out for this has been used by most succeeding workers in the family. Brown recorded 33 genera and about 100 species from the Queensland coast. Little more was added to our knowledge of Queensland

grasses until Mitchell discovered some of the now well-known Mitchell and Flinders grasses in 1846. Leichhardt had collected many grasses in south-eastern Queensland in 1843-5, but no account of them was published until much later. Patrick O'Shanesy was an ardent collector of grasses in the neighbourhood of Rockhampton from 1867 to 1876, Bowman collected over much of Central Queensland during the years 1862-71, Dallachy about Cardwell and Cashmere between 1863 and 1871, Thomas Gulliver around Normanton for many years from about 1874 onward, and Armit in the upper part of the watersheds of the Herbert, Etheridge and Einasleigh Rivers about the same time. Mitchell's grasses were studied by Lindley in England and descriptions published by Mitchell in 1848; the other collectors' specimens were mostly studied by F. Mueller in Melbourne. In 1878 an account of all the grasses known from Australia was published in the seventh volume of Bentham's *Flora Australiensis*; 69 genera and 221 species and varieties were recorded from Queensland.

F. M. Bailey took a keen interest in grasses and one of his first publications, also in 1878, was *An illustrated monograph of the Grasses of Queensland* in collaboration with K. T. Staiger. Only one volume was published containing descriptions and electrotyped figures of twelve grasses. In the sixth volume of his *Queensland Flora* (1902) descriptions are given of 340 species and varieties, 26 of them introduced.

A Czech botanist, Karel Domin, visited Queensland from December, 1909, until April, 1910, and in 1915 published a partial revision of Australian grasses based on his collections and those at Kew; he described or recorded 411 named groups from Queensland, but many of these seem to be insufficiently distinguished.

C. E. Hubbard has already been mentioned; his results and those of resident botanists since his visit are being published piecemeal from time to time and at present we know of 520 named species and varieties, including about 75 naturalized ones; many still await formal description and naming. Grasses more than most plants need specialized study and those from one part of the world must be critically compared with those from other parts. This is time-consuming work. In Australia, botanists have their time taken up with a variety of duties and rarely have the unbroken time necessary for much monographic work, but what has been done has earned a great deal of respect from authorities overseas.

Since the *Flora Australiensis*, a great deal of work has been done on the classification of grasses in general and certain groups in particular. Amongst those who have contributed to the knowledge of Australian and, particularly, Queensland grasses, we should first mention Eduard Hackel, an Austrian agrostologist. In 1889 Hackel published a monograph of the great tribe Andropogoneae, a very large group of grasses especially abundant in the tropical and subtropical parts of the world and particularly difficult to classify. Unfortunately Hackel had relatively few Australian specimens for study. Refinements to Hackel's work by Stapf at Kew, especially for tropical African grasses, served as the basis for the work on Australian grasses by Hubbard and myself. Between 1906 and 1911, Mrs. Chase, at Washington, U.S.A., published the results of her studies on generic limits within the Paniceae, another large and difficult group, and her principles have been followed by most later workers including D. K. Hughes (of Kew) in her account (1923) of the Australian species that had been treated by most earlier botanists as species of *Panicum*. Further studies by Hubbard and myself have resulted in the recognition of more genera, some based on more recently discovered species. From 1926 to 1933, Henrard, a Dutch botanist, published the results of his long and painstaking work on the genus *Aristida*, a group of over 300 species of spear-grasses widely spread in the warmer parts of the world; they are very common in Queensland where at least 50 species are known to occur. In 1950 Henrard published an account of the world's species of *Digitaria*, another difficult genus of more than 300 species of which at least twenty-five are known from Queensland. Beginning with an account of the Mitchell

grasses (**Astreblo**) in 1928, Hubbard has published accounts of many species and several relatively small genera, as well as some important contributions on broader classifications within the family. Pilger, of Berlin, published in 1940 a resume' of the Paniceae, Andropogoneae and some allied groups (subfamily Panicoideae), chiefly as to their genera, and in 1954, shortly after his death, his reclassification of the family as a whole was published with a key to all genera except the bamboos. Pilger's concepts differ in some respects from those that Australian botanists had learned to accept and his work is a challenge to further detailed study.

An idea of the increase of species known to occur in Queensland over the past 150 years may be suggested by the few examples about to be quoted. As points in time I have taken Brown's **Prodromus** (1810), Bentham's **Flora Australiensis**, vol. 7 (1878), Bailey's **Queensland Flora**, vol. 6 (1902) Domin's **Beitroege** (1915), recent revisions, and the catalogue at the Queensland Herbarium. In this list no distinction is made between species and named groups of lower rank; Domin gave names to many plants he distinguished on trifling grounds, and his employment of several categories below the rank of species does not permit of satisfactory comparison with the other figures quoted. A plus sign indicates that other undetermined or unnamed species are represented in the Herbarium. In all cases, the generic concept is that accepted by the reviser quoted; earlier authors referred some of the species to other genera.

Aristido: 2, 11, 13, 28, about 40 (Henrard 1926-33; range of some species doubtful), 48 +.

Bothriochloo: 2, 3, 3, 5, 7 (Blake 1944), 7.

Chlaris: 1, 10, 11, 12, 14 (Everist 1935-8), 14 +. (Includes naturalized species.)

Ectrosia: 2, 3, 3, 5, 14 (Hubbard 1936), 16 +.

Enneapogon: 4, 2, 2, 15, 15 (Burbidge 1941), 15.

Eragrostis: 10, 15, 22, 30, 40 + (revision needed).

Iseilema: 0, 1, 1, 4, 8 (Hubbard 1935), 10 (Blake 1938), 10.

Paspolidium: 3, 3, 3, 10, 5 (Hughes 1923), 15 + (revision in progress).

Triodio: 2, 3, 4, 4, 9 (Burbidge 1953), 9.

Trogus: 0, 1, 1, 0, 1 (Blake 1941), 1.

From the above it can be seen that in some cases at least a close study of a genus has resulted in the recognition of additional species. This will be so in very many genera still to be studied in detail. Botanical exploration in Queensland is still far from complete and almost every extended field trip brings new plants to light. Besides novelties, additional material of other species is accumulating to add to our knowledge of the structure and distribution of well-recognized species.

Grasses are found in almost every kind of country in Queensland, though they are especially abundant in the open grasslands and open forest country. The natural grasslands occupy extensive areas of heavy soil, mostly where the rainfall does not exceed thirty inches a year, and it is here where the well-known blue grasses, Mitchell grasses and Flinders grasses grow. The greatest variety of grasses is found in the open forest country, which usually has lighter soils and often higher rainfall. Some important work has been done on the life history, economic value and management of some of our native grasses, but much remains to be done; much more is known about some introduced grasses.

FURTHER MOSQUITO RECORDS FROM THE TEWANTIN DISTRICT

Elizabeth N. Marks

A previous paper (1955, Qd. Not. 15 (3)) stated that 30 species of mosquitoes were known from the Tewanin district, but listed 29 names. The omission was *Anopheles meroukensis*, taken biting at night at Boreen Point in April, 1954. A species of the *Culex fraudatrix* group, given as a new record from grassy pools at Boreen Point, has since been found to be *Culex* sp. near *cylindricus*, already known from Noosa. Collections made in the vicinity of Noosa in mid-March, 1956, have added three species to the known fauna. *Anopheles otrotipes* was taken biting on a heath flat. In a patch of rain-forest, the large predacious larvae of the "elephant mosquito," *Megarhinus speciosus*, were collected from treeholes, and a female of *Aedes (Chaetocruimyia) spinosipes* was taken biting. The subgenus *Choetocruimyia*, which is confined to Australia, contains half a dozen species. The breeding places have never been discovered, and the larvae remain unknown. Judging by related subgenera, one might expect them to breed in treeholes or plant axils rather than ground pools, but repeated searches have failed to reveal their larvae in these sites. *A. spinosipes* can be recognised as a small mosquito of thick-set appearance (due to its short stout legs), with striking white scaling on the scutum. Males have never been collected. Any area where this species is taken biting is well worth a thorough search for its breeding places.

A MOREL FROM QUEENSLAND

A. B. Cribb

During February, 1956, about fifteen specimens of morel, one of the Ascomycetous fungi were found growing from the cut bank of a roadway near Binnaburra Lodge at the edge of the Lamington National Park. The largest was six inches tall, with the pale yellow-brown cap marked by thin, sharp-edged ridges into shallow reticulations up to 1/3rd inch in diameter. The plants appear to agree with the description given by Seaver (1928, *The North American Cup Fungi. Operculotes.*) of *Marchello crossipes* (Vent.) Pers., a species not previously recorded from Queensland.

In Europe and North America, species of morel are often found in abundance and are highly regarded as food. In Queensland, these fungi seem to be comparatively rare, so that little is known of their palatability. Four of the specimens collected were stewed in milk, and eaten without ill-effect, but also without great enjoyment, the flavour being very mild.

EATING HABIT OF A RING-TAILED POSSUM

Joan W. Cribb

One evening early in October, the writer investigated with a torch the noise heard in a mango tree in a Brisbane garden. The culprit was a pretty specimen of the South-eastern or Common Ring-tail Possum. It was not apparently much upset by the light of the torch, but continued with what it had been doing, although it turned its head away from the light. The possum was sitting on a branch of the tree, the prehensile tail grasping another small branch, and was picking off small sprigs of flowers with its forepaws and eating them, biting pieces off the sprig in its paw much as a human eats a banana.

AUSTRALIAN STINGING TREES

W. D. Francis

Plants with stinging hairs are not very singular in the vegetable kingdom as they occur in at least three widely-separated plant families, namely, the Nettle family (Urticaceae), the Loasa family (Loasaceae) and the Poinsettia family (Euphorbiaceae).

Australian stinging trees belong to the Nettle family, and all three of them are species of the genus **Loportea**. In the world there are over 30 species of this genus and they are mostly found in the warmer regions. With very few exceptions they are trees or shrubs. Fourteen species of **Loportea** have been recorded for New Guinea.

One of the three Australian species (**Loportea moroides**) is barely a tree and rarely exceeds 10 feet in height. It is popularly referred to as Gympie on the North Coast Line of Queensland. As this name has now passed into popular usage it may be as well to maintain it. However, Mr. Jack Waller of "Neusa Vale" informs me that the name Gimpi Gimpi of the aborigines was applied to the Shining-leaved Stinging Tree and that the name of the Queensland town of Gympie was derived from this aboriginal name. Inquiries at the Oxley Memorial Library confirmed that the name of the town of Gympie is derived from the aboriginal name of a stinging nettle.

The three native stinging trees are: Giant Stinging Tree (**Loportea gigos**), Gympie (**Loportea moroides**) and Shining-leaved Stinging Tree (**Loportea photiniphylla**). All three species are denizens of the rain-forests of Eastern Australia.

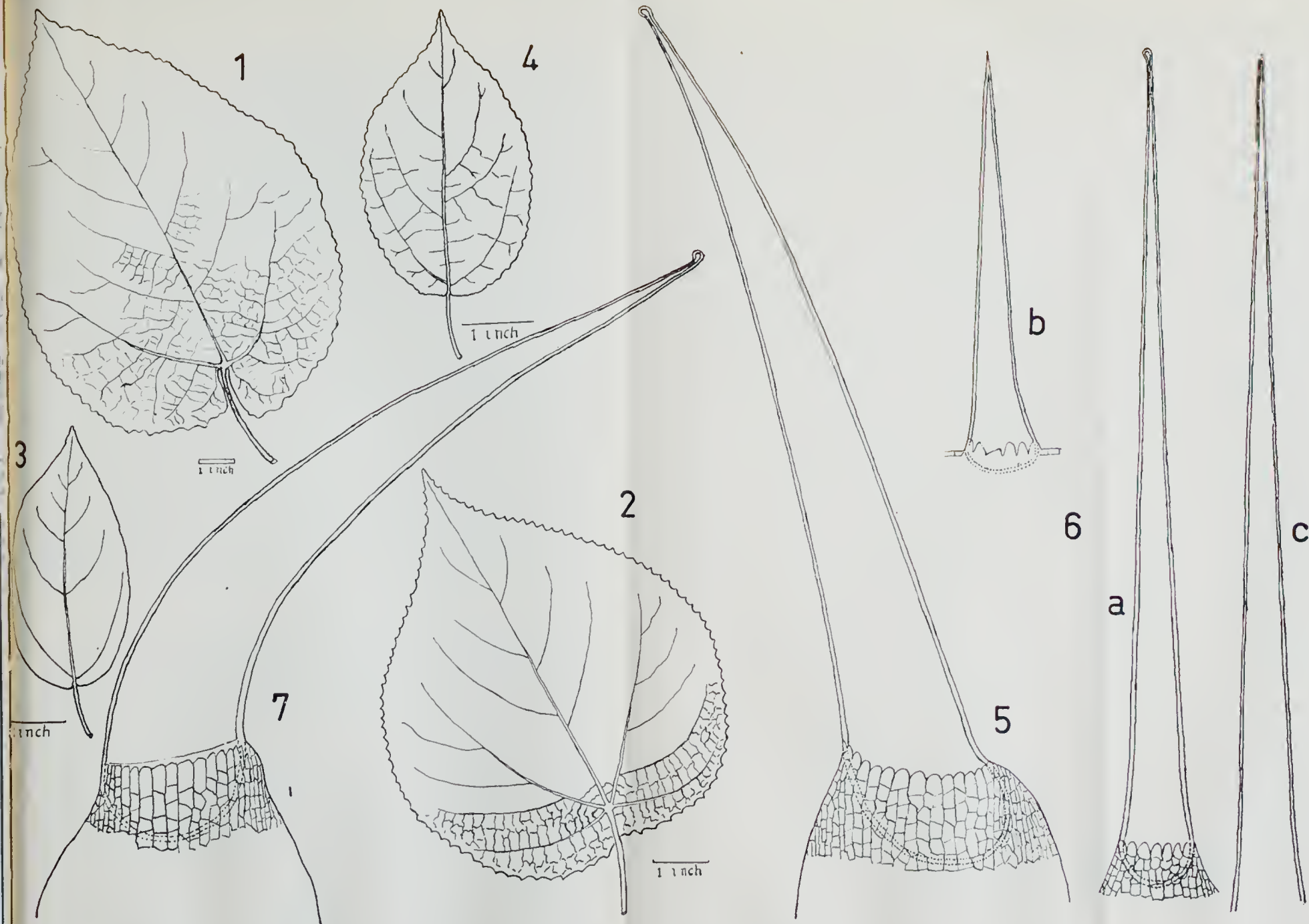
The possession of stinging hairs on the green parts is an important feature in the recognition of Australian stinging trees. However, the shining-leaved stinging tree is sometimes seen without very obvious stinging hairs. All three species have leaves placed alternately on the branchlets. All three have very soft woods. Finely and neatly toothed leaf margins are almost always present in the giant stinging tree and the Gympie, but they are sometimes absent in the shining-leaved stinging tree (see figs. 1, 2, 3, 4).

All three species are described in "**Austrolion Rain-Forest Trees**" (3) and the two tree species are figured there. The three Australian stinging trees can be readily separated from each other by their mature leaves. In the shining-leaved stinging tree they are almost always under 4 inches in breadth. The two other species mostly have mature leaves over 4 inches in breadth. The leaves of the Gympie are neatly distinguished from those of the giant stinging tree by the insertion of the leaf stalk on the underside of the leaf mostly within the margin of the leaf, a condition described as peltate in botanical terminology (see figs. 1-4).

The giant stinging tree is the largest and attains a height of 120 feet and a stem diameter of over 6 feet. The shining-leaved stinging tree grows to about 90 feet in height and about 2 feet 6 inches in stem diameter. The height of the Gympie, as already mentioned, is up to about 10 feet. The fruits of all three species are fleshy. In the giant stinging tree they are greenish white or pink and acid to the taste. In the shining-leaved stinging tree they are greenish white and acid in flavour. In the Gympie they are attractively pale mauve and insipid or slightly sweet.

Distribution

The giant stinging tree ranges from the Victorian border to Imbil, south of Gympie. The Gympie extends from the Tweed River to Cape York Peninsula in the north. The shining-leaved stinging tree is found as far south as Bateman's Bay in southern New South Wales and as far north as Atherton in north Queensland.



W. D. FRANCIS: FOURTH C. T. WHITE MEMORIAL LECTURE

Fig. 1. Leaf of Giant Stinging Tree (*Loportea gigas*), showing lower surface.

Fig. 2. Leaf of Gympie (*L. moroides*) showing lower surface.

Fig. 3. Leaf of Shining-leaved Stinging Tree (*L. photiniphylla*) showing upper surface.

Fig. 4. Leaf of Shining-leaved Stinging Tree (*L. photiniphylla*) showing lower surface.

Fig. 5. Stinging hair of Giant Stinging Tree (*L. gigas*). The cells shown at base of hair are epidermal, x 100.

Fig. 6. Stinging hairs of the Gympie (*L. moroides*). a, c, large hairs; b, smaller hair; c, hair from herbarium specimen from Mowbray R., north of Cairns. Cells shown at base of hairs are epidermal, x 100.

Fig. 7. Stinging hair of Shining-leaved Stinging Tree (*L. photiniphylla*). Cells shown at base of hair are epidermal, x 100.

Stinging Properties

The Gympie has by far the most virulent sting of the Australian species of *Laportea*. Its stinging effects are felt for weeks after contact with its green parts. The sting of the other two species is usually not felt for much more than 24 hours after contact.

After the first 2 or 3 days of intense irritation the recurrence of the sting of the Gympie mostly occurs during or after washing of the affected skin and it is often felt during cold weather. The recurrence of the stinging effects in this way occurs for at least 3 months. In some cases it is noticed that a severe sting on the arm by the Gympie is followed after a latent period by a pain under the affected arm and when a leg has been stung, by a pain in the groin near the affected leg. It is thought that lymphatic glands are the loci of the pain.

No cases of death in human beings from contact with Australian stinging trees are on record. In one instance at Kin Kin intermittent periods of unconsciousness in a man have been reported and the case was taken to Gympie hospital. In this instance the sting was from *Laportea moroides*. It is also reported that the death of a horse resulted from stinging by this species.

Winkler (6) apparently quoting a note on a collector's label states that the dried bark of a New Guinea species, *Laportea cordata*, is said to be fatal when contacted in eating. The species is described as a large tree of the primeval forest. The same author (6) quotes Weinland to the effect that *Laportea worburgii*, also of New Guinea, is feared by the natives.

When the stems of large numbers of the Gympie are severed as in brushing or clearing they frequently cause violent sneezing.

It is fairly well known that annual nettles such as *Urtica urens*, which is so well known in Europe, do not sting when grasped firmly. In my early days at Kin Kin I firmly grasped a leaf of the Gympie and was severely stung. The hairs of the giant stinging tree and the shining-leaved stinging tree in the same way do not yield to pressure painlessly.

Structure of Stinging Hairs

The largest stinging hairs in all three species are inserted at the base in the apex of a structure called a pedestal. This pedestal is part of the leaf or other green organ and is cellular. It varies from conical to broadly conical. In the giant stinging tree and the Gympie it is often about .5 mm. broad at the base and in the shining-leaved stinging tree it is often much larger and more prominent and may exceed 1.5 mm. in breadth at the base.

The larger hairs in all three species can be seen with the unaided eye and are about 1/16 inch long. Globular hollow heads cap the largest hairs of the three species, but the medium-sized and small hairs are terminated by sharp points (see figs. 5-7). The largest hairs from a specimen of the Gympie from Mowbray River, north of Cairns, collected by Mr. L. J. Brass, were found to be terminated by a blunt point (see fig. 6c). The following are the principal external dimensions above the pedestals of the largest hairs of the three species:

Species	Length	Breadth of base	Diam. of head
<i>Laportea gigas</i>	1.45 mm.	0.217 mm.	0.016 mm.
<i>Laportea moroides</i>	1.45 mm.	0.145 mm.	0.011 mm.
<i>Laportea photiniphylla</i> ...	1.3 mm.	0.27 mm.	0.014 mm.

The table above shows that the terminal heads are smallest in the Gympie and that the basal measurement is also smallest in this species. Because of their slenderness the hairs of the Gympie are more effective organs of penetration than the hairs of the other two species.

When one of the largest hairs of the three species is grasped by forceps it breaks off at the base. Upon contact with an object the hollow heads at the apex are also broken off. In the case of the smaller hairs because of the fineness and brittleness of the portion near the apex the point is broken off when contact with a resistant substance is made. In each instance the apical portion of the hairs is left with a fine, jagged, often oblique, hollow point which allows the contents of the hairs to emerge. These observations explain how the hairs on contact or pressure are forced into the skin and become detached from the plant.

The hairs of all types can be compared with hollow needles. The larger hairs are in reality giant cells. The cell contents of the larger hairs when viewed microscopically are variously coloured greenish yellow, brown, and in parts opaque or black, and except for the darker portions they are more or less transparent. Their texture varies from apparently structureless to finely particulate. The particles vary in size from 4 microns to less than 1 micron in diameter; they often appear to have a dark periphery and a pellucid interior, appearances which are familiar to microscopists as apparently similar to those presented by oil particles. Chloroplasts were observed in some of the hairs of the Gympie and the giant stinging tree. In a few of the hairs of these two species rectangular, isotropic crystals were observed.

Nuclei 30-45 microns in diameter were seen in some of the larger hairs of the three species. In some cases it was noticed that the nuclei were as large or even larger than the epidermal cells near the base of the hairs.

On the outside and surrounding the base or slightly above it in the larger stinging hairs is an elegant ring or 'collarete' of flattened, apically-rounded, epidermal cells. This ring is the apical portion of the pedestal. See figs. 5, 6 and 7. All of the hairs in the figures are from the upper surface of the leaves. When viewed in polarised light the walls of the hairs are birefringent. An unusual feature of the heads of the hairs of the giant stinging tree and the Gympie is that they often show a dark cross between crossed Nicol prisms. The cross is similar to that shown by starch grains.

The Active Principle of the Stinging Sensation

The problem of the active principle of the sting of the common nettles (*Urtica* spp.) has been a subject of investigation for a very long time. Solereder (5) states that "Since the work of Gorup-Besanez the irritant causing the stinging sensation has usually been stated to be formic acid; this, however, is incorrect, and it is probably a substance related to the ferments". Flury (2) found that the nettle effect is produced by a non-volatile, unsaturated, nitrogen-free compound of acid nature, which, according to its properties, closely approaches the resin acids. The stinging-nettle poison is neither formic acid, nor an enzyme nor a toxalbumin. Incidentally I may mention that Flury in the introduction to his paper states that there are many indications of a close homogeneity of the poisons generated by marine nettle animals and the plant nettle poisons. The principal species investigated by Flury was *Urtica dioica*, the common nettle. Emmelin and Feldberg (1) attribute the sting of the stinging nettle to histamine and acetylcholine. The species they investigated was *Urtica urens*.

The stinging hairs of the giant stinging tree were investigated chemically by J. M. Petrie (4) who concluded that their stinging property is due to the free concentrated formic and acetic acids contained in them. He found the hairs to be composed of silica. The stinging hairs of the Gympie and the shining-leaved stinging tree do not appear to have been investigated.

Experimental

The experiments were designed to test the effect of heating, drying and boiling on the stinging properties of the Gypie (*Laportea moroides*) as this species possesses by far the most virulent stinging hairs of the Australian species.

In the first experiment, which was carried out at Kin Kin, a fresh green leaf was placed in a heated oven. The thermometer registered over 110° C. Unfortunately this thermometer was only graduated to 110° C. but it was the most suitable available. After 10 minutes the leaf blade was curled up and dark brown. The leaf stalk only was greenish brown and owing to the effect of the heat it was longitudinally corrugated and had contracted from 6 mm. to 4 mm. in diameter. At this stage the leaf was removed from the oven as further heating would have made it useless for experimental purposes on account of its brittleness. When rubbed on the skin of the forearm the leaf blade broke into fragments, but the 5.5 cm. stalk remained intact and was rubbed on together with the fragments of the blade.

Within a few seconds the intense stinging sensation was felt. The skin immediately became red and broke out into small white lumps (? sebaceous swellings) 1-2 mm. in diameter and larger white lumps 4-6 mm. in diameter. Later the same day slight pain was felt at the elbow and in the upper arm but no underarm pain was experienced. The stinging sensation remained continuous and intense throughout the day. Twenty-four hours after the beginning of the experiment the stinging sensation was still felt and occasional twinges of pain were experienced. The stinging sensation was still experienced after washing and drying three months after the experiment was carried out.

Three days after the beginning of the experiment the white areas disappeared and the redness disappeared on the fifth day.

Immediately after rubbing the leaf on the forearm some stinging hairs were removed from the leaf stalk and examined microscopically. The heating had caused shrinking and plasmolysis of the protoplasm and bleaching of the colours of the cell contents.

In the second experiment a herbarium specimen of the Gypie was used at the suggestion of my friend Mr. S. L. Everist. The leaf used is from a specimen collected at Palmwoods in May, 1909. It is propitious to the present occasion that the specimen chosen was collected by C. T. White whose memory we venerate with respect and affection tonight. The leaf was warmed for a few seconds to restore its rigidity. The upper surface was then rubbed on the left side of the shin. After a latent period of several minutes the stinging sensation commenced and gained in intensity for about half an hour. The stinging sensation was continuous throughout the day and at night. No reddening of the skin was observed. On the second day the stinging sensation was felt slightly after washing and drying. On the third day it was felt several times during the day and was not felt on the fourth day.

Before rubbing the leaf on the skin a slide showing the hairs was made. Microscopic examination showed that most of the hairs had lost their straight and rigid appearance and were shrunken, curved and bent. This observation indicates that the hairs had lost much of their effectiveness as organs of penetration in contrast with the hairs of green specimens. This circumstance emphasises the stable character of the stinging principle particularly when it is remembered that the leaf used in the experiment was kept between sheets of absorbent paper for 46 years.

In the third experiment a leaf of *Laportea moroides* which had been dried between absorbent paper for 3 weeks was boiled for 20 minutes and allowed to dry in air. The upper surface of the leaf was then rubbed on the right side of the shin. The stinging sensation was first felt 15 seconds after rubbing. Slight redness of the skin was evident 10 minutes after rubbing, but was more conspicuous $1\frac{1}{2}$ hours after rubbing. The greatest

intensity of the stinging sensation was experienced $\frac{1}{2}$ -1 hour after rubbing and this continued throughout the day. On the second day the stinging sensation was less severe and was felt at intervals especially in the early morning, after washing, and at night in the cooler temperature. On the third day the redness of the skin had disappeared; the stinging sensation was felt at intervals during the early morning and after washing and drying and continued to be experienced after washing and drying until 7 days after the commencement of the experiment.

In the fourth experiment a leaf of *Lapartea gigas* was used. The leaf was from a fresh specimen and was young and green. It was boiled for 20 minutes, allowed to dry in air and rubbed on the left side of the right shin. After a few seconds the stinging sensation was felt. No reddening of the skin was observed. The stinging sensation was experienced throughout the first day but was not so acute as that which resulted from the experiment with *Lapartea maraides*. On the second day the stinging sensation was slightly felt after washing and drying and was not experienced on the following day.

Remedies and Treatment

The most popular and commonly known treatment to alleviate the pain of the sting is that of rubbing the affected areas of the sting with the Cunjevoi (*Alacasia macrarrhiza*). I tried this widely advocated remedy very many years ago on the sting of *Lapartea maraides* and it seemed to intensify the pain. Mr. J. Waller of "Neusa Vale" who has lived at Kin Kin all his life informs me that in his experience the Cunjevoi has no effect in reducing the stinging sensation.

Warmth such as that obtained from covering by woollen clothing and the application of heat such as that obtainable from applying a very hot water bottle seem to be the most effective ways of reducing the pain. Contact with cold water increases the stinging sensation. There is a definite relationship between the intensity of the sting and cold conditions.

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JOTTINGS OF AN AMATEUR POND-LIFER

F. V. Kunze

Many club members probably do not realise the pleasure and interest to be had in the fascinating though neglected hobby of studying pond life. I was inspired to take it up first by meeting and later by reading the lectures of Mr. W. R. Colledge who years ago gave his spare time to this subject. Some of his lectures to our Club are printed in early volumes of this journal. How I wish I could have pursued my hobby in his company.

To study pond life one needs a microscope and it is advisable to get a standard model to which one can add as one's interest and technique advance. One needs also a reference book. Mine has been "Aquatic Microscopy," by Alfred C. Stokes, which gives good hints on collecting all the impedimenta at minimum cost.

From the byways of the Brisbane River my first serious dippings were made about July, 1953. One thing definitely named was a Rotifer, at work with its cilia creating its own whirlpool to sweep food into its open mouth. One would think these creatures stopped every now and again to swallow, the way they contract their bodies, but Stokes says they are easily frightened. Then a young Cyclops, marked first with a query in my notes, and subsequently 'definitely'. How thrilling it is gradually to arrive at the stage where one is able even now and then to say such and such is a so and so. I still see lots of things I cannot determine—this spurs one on to find out. With the dipping tube there are hundreds of species one can get, and with a little experience one can be almost sure of not getting 'nothing at all'.

In a dipping from a pool at Lower Coomera I saw my first *Amoeba*. Such phrases as 'out of the primeval slime' suggested themselves. Was it from a simple cell such as this that the complex multicellular organism looking at it evolved? Total forms listed from this pool were 10 species of desmids, 3 diatoms, 6 rhizopods, 2 infusoria, 3 worms, 2 rotifers, 2 polyzoa, 3 algae. In my latest collection from an Ipswich pool I have identified 33 species.

The scientific accuracy of one's records will of course be limited by the extent of one's experience, and the scope of one's reference books, but here is on interest that will remain for years to come and fill many an odd hour, with much pleasure to oneself, and, who knows, may be a little service to Science.

If you are at all interested don't delay in getting a microscope and having a look for yourself. Personally, I hope to be a "Lifer Pond-Lifer".

AN UNUSUAL OCCURRENCE OF A BLUE-GREEN ALGA

Mary Archibald

In April, 1952, a Graceville man who had bought a new transparent plastic hose was surprised to find, when he turned on the tap, lengths of a dark green membrane whirling around inside. As the pressure increased, the pieces built up near the nozzle before being forced out with a spurt as long, dark green strips. This material proved to be *Phormidium tenue* (Menegh.) Gom., one of the Blue-green algae.

OUR FIRST FIFTY YEARS

By J. Cossar Smith
(abridged)*

This evening we are celebrating the 50th Anniversary of the Queensland Naturalists' Club, and I have been given the privilege of preparing a short history of the Club as a C. T. White Memorial Lecture.

Inauguration, Aims and Achievements of the Club

In March, 1906, three well-known scientists, Professor S. J. B. Skertchly, Mr. Henry Tryon and Mr. J. Johnston, called a meeting in Brisbane, with the idea of forming a club to further public interest in natural history. As a result, the Field Naturalists' Club, as it was called until 1922, was successfully inaugurated in April, 1906, with 50 members. The aims of the Club were:—(1) The local organization of nature students; (2) The furtherance of the nature study movement; (3) The cultivation and study of natural history in all its branches.

Attempts were made in 1907 and 1908 to promote nature study amongst children by means of excursions for senior students. Only three took place. Attempts to revive them in 1922 and 1926 also failed through lack of interest.

In his Presidential Address in 1915, Mr. Frank Burtt said: "I believe that . . . [the Club's] success is due in a very great measure to the fact that its membership consists of two classes—those who have made the study of science their life's business, and those who . . . are merely lovers of nature, . . . and that between those two classes of members perfect freedom of intercourse exists, those with the greater knowledge in any one subject being always willing to impart their special knowledge to members in search of it". That is still true today. Professor Skertchly was very emphatic that it was a "Club" where friendly information could be given and received, and not a "Society" of scientific experts only.

Mr. W. R. Colledge, in his Presidential Address in 1911, said: "We are to be Nature's students, in our ways unfettered and free: no text books to master or examinations to pass . . . I think it is good to keep before us the ideal club life; not to permit ourselves to be isolated into units or detachments . . ."

In 1916, Dr. F. Bage, in her Presidential Address, said: "I should like to emphasise the value of our Club in the matter of educating and influencing public opinion. We are members of a Club which has no party political feelings, and no vested interests, and therefore, as a Club, we can speak with no uncertain voice when necessary".

From the very beginning, the Club has shown the way in encouraging preservation and protection of our flora and fauna. Our Council was partly instrumental in having an Animals and Birds Act passed. Also we can take credit for preserving the Sandgate Lagoons and the Bora Ring at Nudgee. We have been successful in having other places declared Sanctuaries, including Hercules Bank (now Bishop I.), Bribie I. and part of Sunnybank. We were one of the prime movers in asking the authorities to establish National Parks.

In 1908, the Club supported the movement to establish a Queensland University. This objective was achieved in 1910, and over the years we have gained much from the active participation of various members of the University staff.

* Because of lack of space it has been possible to publish only an abridged version of this lecture.—Editor.

Some Pioneers and Other Prominent Members

Now I think we should learn something of those men who were pioneers of our Club.

Professor S. B. J. Skertchly, the first President, though primarily a geologist, was interested in many other branches of natural history. Mr. Heber Longman wrote of him—"Behind his witticisms [and] his learning, . . . there was one big central fact—and that was his great love of nature and his delight in her inexhaustible treasures. . . . He wrote many interesting articles of popular natural history in the '*Courier*'. He did excellent work for the old Gould League of Bird Lovers. He was a good all-round Field Naturalist". "Into his natural history, he always put a touch of poetry, and as the text of his first address he quoted Keats' well-known line: '*The Poetry of Earth is Never Dead*'." That line now appears on the cover of "*The Queensland Naturalist*".

Professor Skertchly felt that the room in which a meeting was held influenced it. Early meetings of the Club were held in the basement of the old Technical College in Ann Street, with school forms to sit on and in very uninspiring surroundings; Professor Skertchly commented as follows:—"A room garnished with rows of benches . . . kills all sociability—it is too formal. It savours of the college, it reeks of the class-room, and one could no more be pleasantly chatty amid its wooden parallels than one could tread a measure among church pews. . . . Picture the bliss of this room with a long table running down its middle, with chairs or benches dotted irregularly as the island of the Cyclades. The table is adorned with the most heterogeneous assortment of birds, beasts, fishes, plants and stones, brought by ourselves. Picture us all wandering around, among them, each telling what he knew of the exhibits, or asking questions thereanent. The formal, necessary, business has been got through in a few moments, and for an hour or two lively and intellectual conversation buzzes all round the place and humanises it. That is my idea of club life. Here we could hatch out our scientific chickens, and send the selected pullets to market at the Royal Society. . . ."

Professor Skertchly died in 1926 and was buried in the Nerang Cemetery. His granite memorial stone, erected with funds raised by scientific societies of Brisbane, bears the quotation, "*The Poetry of Earth is Never Dead*".

Mr. Henry Tryon was a founder of the Club and our second President, i.e., during 1907. He was an entomologist of note, but, like Professor Skertchly, was interested in many other branches of nature. On arrival in Queensland from New Zealand, he was appointed to the scientific staff of the Queensland Museum. Later he became Government Entomologist and Vegetable Pathologist in the Department of Agriculture and Stock. Mr. C. W. Holland wrote: "Mr. Tryon's services to the sugar industry alone were of great value. . . . In 1884 he helped to establish the Royal Society of Queensland, of which he was first Hon. Secretary. Two years later he was the principal mover in the formation of a Field Naturalists' Section of the Royal Society which lasted until 1894. Early in 1892 . . . the Natural History Society of Queensland [was formed] and Mr. Tryon was its first President. . . . When, in 1888, a Royal Commission was appointed in New South Wales to report upon . . . the extermination of rabbits, Mr. Tryon was one of two Queensland representatives. . . . He was the first to suggest the possibility of using natural enemies [to eradicate the prickly-pear] . . . and his suggestion led to the ultimate conquest of the pest." In his younger days Mr. Tryon was a regular attendee at Club excursions and came to meetings till he was a very old man. He died in 1943 in his 87th year.

Mr. C. W. Holland, the father of our present Hon. Secretary, became Hon. Secretary of the Club in 1907 and retained that position till the end of 1912, when he left Queensland as Secretary of the Travelling Prickly Pear Commission. Mr. Holland was the Club's auditor for many

years and a great advocate for the protection of our native birds. At the time of his death in 1952, at the age of 84, he was the Club's oldest surviving member.

Another pioneer was our third President, Dr. John Shirley, who served during 1908. When he was 70 and over, he went on long excursions and thought nothing of steep climbs in pursuit of plants or land shells, his foremost interests. He published a series of papers on "The Lichen Flora of Queensland". After reaching the retiring age he was appointed Conchologist to the Queensland Museum for a time. He died in 1922.

Mr. Heber Longman, President in 1913, was another member with very diverse interests in the field of natural history. Initially he was a keen collector of plants. Later he gained an international reputation for his contributions to vertebrate palaeontology. Professor D. A. Herbert wrote of him—"There were, too, important contributions to the living fauna of the States. Members . . . remember with pleasure the numerous occasions on which . . . he lectured on zoological and palaeontological topics. . . . Aboriginal skulls, native weapons, live reptiles, insects, fish, birds, Barrier Reef specimens, artifacts and fossils took on a new interest as he spoke." In 1917 he became Director of the Queensland Museum and held that post for 28 years. Once a year he invited members of the Club to the Museum where they spent a most interesting afternoon. Among honours bestowed on him were the Australian Natural History Medallion in 1946, and in 1952, the Mueller Memorial Medal. His death in 1954 removed a great naturalist from our midst.

Mr. Rowland Illidge was a foundation member and over the years held most offices in the Club. Although essentially an entomologist, he knew a great deal about our native birds and also something of our native plants, which he introduced into his garden at Bulimba. He became the first Hon. Member of the Entomological Society of Queensland, and was the first Hon. Associate Member of the Royal Zoological Society of New South Wales.

Mr. W. R. Colledge, President in 1910, was a kindly, genial soul, always ready to help others from his store of knowledge, which was particularly great on the subject of pond life—Rotifers and mosquitoes especially. He rarely missed either a meeting or an excursion in all the years he was a member and tried to present something new at each meeting.

Dr. Jefferis Turner was a foundation member and an outstanding field naturalist. He became a world authority on Australian Lepidoptera, specializing in the Micro-Lepidoptera. His very valuable and large collection is now housed in the National Museum at Canberra. He died in 1947 at the age of 86.

Many other members deserve mention, but my time will not allow it.

We now come to Mr. C. T. White. When formed, the Club was intended for adults only, but two years later, in 1908, that rule was suspended to allow, as Professor Skertchly described him, "an incipient genius, young Cyril White," to become a member. He was a member for 42 years and led innumerable excursions at which he rarely failed to find something of botanical interest. He also gave addresses at many meetings, usually accompanied by interesting specimens or slides, and was frequently called upon to comment on exhibits tabled by other members. Apart from serving as President (3 times), Hon. Secretary, Excursion Secretary and Treasurer, he was Editor of "The Queensland Naturalist" for about 20 years, and contributed many papers to it.

Mr. White learnt his botany from his grandfather, Mr. F. Manson Bailey, Colonial Botanist, and an Honorary Member of this Club. He became Government Botanist in 1918 at the age of 28 and fulfilled that office with distinction till his death.

Mr. White travelled widely in Queensland and visited all of the Australian States except Northern Territory. Botany was both his recreation and his work. In 1918 he visited New Guinea, and was there again in 1944 to instruct members of army forestry units. In 1923, he collected in New Caledonia. Most of 1939 was spent at the Royal Botanic Gardens, Kew, in England, examining type material of Australian plants and working on the identification of undetermined specimens. For six months during 1945, he was in the Solomon Islands co-operating in a forest survey of the area.

In 1946, Mr. White was awarded the Mueller Memorial Medal. Two years later he received the honorary degree of Master of Science at the University of Queensland. He was a past President of several well-known societies.

His travels provided him with a wealth of anecdote on which he drew to enliven his talks and conversation. He was always bright and interesting company. His sudden death in 1950 came as a shock to all who knew him and caused a very great loss to the Club.

Mrs. White, who is still with us, should also be mentioned in her own right as an early and active member of the Club.

The only published list of members of the Club appeared in the first issue of "The Naturalist", i.e., in March, 1908. Among the foundation members, Messrs. J. E. England, J. C. McMinn, and J. Wedd are the only survivors who have been located. Other members at that early date who are still living include Messrs. G. H. Barker, R. W. Lahey (who has played an active part in the National Park movement) and W. A. Zerner.

Mr. Barker is the only one of these early members who still attends our meetings. In the 1908 list his main interest was given as botany, but for many years we have known him as an authority on ornithology. He was on the Council in 1910 and served almost continuously until quite recently, when ill-health caused his retirement. He was President in 1920 and on other occasions. For some years he was our efficient Excursion Secretary. He has also been most generous in presenting to the Club valuable books and magazines on natural history.

While in Brisbane, Mr. A. H. Chisholm was one of the Club's keenest and most active members. He was an ardent advocate for the protection of our native fauna and flora, a renowned ornithologist and bird photographer. On his departure for the South in 1922 he was made an Honorary Member, and has since published several interesting books on natural history subjects.

Dr. E. O. Marks became a member in the early 1920's, was President on more than one occasion, and for many years a member of the Council. His interest is chiefly geological, but almost everything in the way of natural history seems to be included. He and Mrs. Marks have been popular hosts to the Club on a number of occasions at their Camp Mountain home. His daughter, Dr. E. N. Marks, as an entomologist, is following in her father's footsteps in her interest in our Club. She is a noted authority on mosquitoes, our present Excursion Secretary and a Past President.

Our library, as old as the Club, with its large stock of books and magazines, plays an important part. Many Australian and overseas societies send us their publications in exchange for our own, and in addition there are many reference books on natural history subjects. Mrs. G. L. Jackson has capably acted as Librarian for a number of years now.

No account of office-bearers would be complete without mention of Miss E. E. Baird, our Hon. Secretary for more than 21 years, during which time she did a worthy job. For part of that time she acted as Excursion

Secretary. Further, mention should be made of Mr. W. J. Sanderson, who, for many years, skilfully operated the projector at illustrated talks, and often contributed slides of his own making.

Excursions

From the inception of the Club, excursions have been an important part of its activities and have proved most popular, both as pleasurable outings and for the natural history knowledge gained. Some localities visited in the very early years are still visited occasionally; others, through expansion of the city and opening up of the country, have now lost much of their interest.

As a result of one trip to Toowoomba to see a unique double-coned extinct volcano in the quarry, local inhabitants were encouraged to form a Field Naturalists' Club in 1908. This body was instrumental in having part of the local quarry preserved.

Now, as then, an excursion is held each month, usually on a Saturday afternoon, to some nearby place and to more distant areas at Easter and long week-ends. Some which have led to the publication of more detailed reports in the "Naturalist" are the Easter camps at Dunwich and Myora (1921), Cowan Cowan (1924), Canungra (1928), Caloundra (1933), Mt. Edwards (1934), Numinbah Valley (1935), Upper Albert River (1936 and 1939), Coolumb (1938), Running Creek (1941), Noosa (1946) and Somerset Dam (1947), and the shorter excursions to Bulwer on Moreton Island (1908) and Glass House Mountains (1910).

Wild Flower Shows

One feature of the Club over the years has been the exhibit of wild flowers each September. This commenced before 1915, for in that year the "Naturalist" records that "The usual custom of arranging the exhibits in botanical order was departed from. . . ." In 1920, a "Wild Flower Show and General Natural History Exhibition" was held at the School of Arts. In 1929 there was a competition for flowers arranged for decorative effect and prizes were awarded. With the outbreak of war in 1939, these wild flower shows ceased.

"The Queensland Naturalist"

And now a word about "The Queensland Naturalist." The Organ of the Field Naturalists' Club and its Branches" was the subtitle on the cover of Vol. 1, No. 1, published on 31st March, 1908. This has now become, after a few changes, "The Journal of the Queensland Naturalists' Club." To the numerous copies I possess, I am indebted for most of the material in this history.

There are notes about meetings, reports on excursions and exhibits, descriptions of new species of plants, insects, birds, fossils, etc., original observations on most aspects of natural history, and above all addresses of retiring Presidents. Some of the latter are serious, some humorous, but full of scientific information, and some show that the writers were equally learned in literature and science.

I hope "The Queensland Naturalist" with its high standard will continue to be published for many years to come.

And now I will end by re-echoing what Mr. Frank Burtt said in 1915—"Long may the present good-fellowship continue and long may the Club prolong its life of usefulness".

WHAT'S THAT?—SOME UNCOMMON BIRDS SEEN RECENTLY

Marjory Hawken

White-fronted Tern (*Sterna striata* Gmelin): Three observed at Reef Pt., Scarborough, early in March, 1956, in the company of mixed waders and terns more usually found in this region, namely, the Caspian, Crested and Little Tern. The conspicuous black mark on the shoulder and the size, intermediate between that of the Crested and the Little Tern, draw attention to the White-fronted Tern.

Whit-winger Black Tern (*Chlidanius leuaptera* Temminck): Three observed at Raby Bay by Mr. L. Amiet in April, 1955, and reported in the "Emu" 56 (2). This bird has not been reported here since Easter, 1925, when it was seen by Mrs. Mayo near King Island, Moreton Bay.

Black-tailed Godwit (*Limosa limosa* L.): A large flock first observed at Thornside, 6.xi, 1955, and later a small flock seen about the Sandgate area for some time. Their habit of raising their wings above their head when at rest, showing the black and white marking, made them conspicuous in the mixed company of Bar-tailed Godwits and other shore birds.

Double-banded Dotterel (*Charadrius bicinctus* Jardine & Selby). A regular winter visitor from New Zealand, but not usually seen so far north. As it arrives in eclipse plumage it is sometimes confused with the Mongolian Dotterel.

Little Cuckoo-shrike (*Caracina robusta* Latham): Two seen at Brookfield in July, 1956. Their smaller size, that of a peewit, and black tail rather than the black eye marking confirmed our determination.

Striped Honey-eater (*Plectrohynchus lanceolata* Gould): Two seen at Brookfield on the Club outing in June this year (1956).

Yellow-tufted Honey-eater (*Meliphaga melanaps* Latham): Observed during the Club excursion, 15.xi, 1953, at Redbank Plains in trees in the house grounds of our host, Mr. Jones.

This species and the two preceding species are regarded as inland birds, but, as with the white-backed Swallow and red-backed Kingfisher, are seen from time to time. The Bronze-winged Pigeon now appears to be a permanent resident here.

Blue Wren (*Malurus cyaneus* Latham): Observed by Miss M. Holland nesting for the last three years near her home in Toowong. It is many years since this bird was previously seen in the Brisbane district.

Brolga (*Megalarnis rubicundus* Perry): Two adults and well-grown young one observed on the swamp at Bald Hills in October, 1955. The owner of the property informed us that it had bred there.

Jabiru (*Xenorhynchus asiaticus* Latham): Seen at the Bald Hills Swamp and at other places around Brisbane.

Currawong (*Strepera graculina* Shaw): Invaded the city area in considerable numbers last year (1955), but only occasional ones seen this year.

A reminder for those who frequent the beaches: Keep a watch out for bird casualties. The Queensland Museum would welcome such specimens.

TRIASSIC FOOTPRINTS IN QUEENSLAND

F. S. Colliver

For some time now footprints of Dinosaurs and possibly Amphibia have been known from the Mesozoic of Queensland.

Three such occurrences are:

1. A footprint of a three-toed dinosaur found in the roof shale of the Lanefield Extended Colliery at Rosewood (Ball 1946, **Qd. Govt. Min. J. 47**, p. 179).
2. A large number of confused footprints with some individual three-toed forms 2" long and 20" span from the Balgawan Colliery roof shale (Moreton 1951, **Qd. Govt. Min. J. 52**, p. 582).
3. Some 32 impressions noted at four positions some of 12" length and 12" span in line showing a heel to heel length of pace of 2', from the old fire-clay workings near Mt. Morgan (Staines 1954, **Qd. Govt. Min. J. 55**, pp. 483-5).

(Further collections at Balgawan Colliery were made by the Queensland Museum in recent years when not only three-toed forms, but indefinite quadrupedal forms were also collected).

The first two locations are in sediments referred to as Walloan and possibly approximately Jurassic in age.

The freshwater deposits of Triassic Age in and about Brisbane, and in particular those of Petrie's Quarry at Albion with their great wealth of plant fossils had been searched for many years for vertebrate evidence without success.

During the A.N.Z.A.A.S. excursion to Petrie's Quarry (May, 1951) Professor E. S. Hills of the Melbourne University, Geology Department, pointed out some rather indefinite markings as footprints. Although not convinced of their origin we made plaster casts in situ and the actual specimens were cut out at a later date and the evidence looked at more critically. Bearing in mind that these 'footprints' were made in very soft material, possibly water-logged or even under water, that the animal's weight pressed on the digits forcing the mud up under the sole of the foot, and that the sides of the prints would tend to flow inwards after the animal moved on, a fairly reasonable footprint was recognised.

Smaller odd markings were later noted and the better preserved items showed that these were apparently impressions of forefeet; thus the animal was a quadruped with four feet on the ground.

During each successive excursion to the locality a special search was made for further footprints and odd items were discovered and collected. In 1955 a lucky blow uncovered a lower layer in the floor of the quarry and showed up a very good footprint. Staff Members from the Geology Department later carefully uncovered an area approximately 12' x 6' showing some impressions in several lines of tracks tending in the one general direction and two separate footprints cutting across these at right angles. The main tracks were of the general quadrupedal type noted previously, but the two odd tracks were apparently made by a three-toed biped having a stride approaching 7 feet.

The hole made in the beginning which revealed this lower layer had apparently destroyed a footprint in the middle of the series, and thus we had at least three possibilities to contend with:—

- a. If this print was a small one it could be of the quadrupedal fore-limb type.
- b. If larger and belonging to the general groups and in line with them it still could indicate the quadrupedal type of animal.
- c. If large and three-toed trending with the other two at approximately right angles to the main lines it could have reduced the stride to half and also then the size of the bipedal type.

Careful questioning of the students who first uncovered the layer of footprints, and close study both in situ and of a series of photographs of the footprints seemed to justify the idea of two distinct animals and that one was a dinosaur with a stride of 7 feet, and thus for the first time evidence of these animals in the Triassic seemed definite.

Subsequently other individual footprints were collected and the opportunity was taken during June of this year to show all the evidence to Professor K. Caster from Cincinnati, who has had a large experience with fossil tracks of many forms. Professor Caster agreed that here we had definite evidence of there being not only Triassic quadrupedal, but also bipedal Dinosauria in Queensland and thus we have been able to extend the range in time of these animals here back from the middle to the beginning of the Mesozoic.

The footprints mentioned range from 3" to 7" long.

A NOTE ON THE ALGAL FOOD OF THREE MARINE FISH FROM SOUTHERN QUEENSLAND

Margaret Martin and Barbara Winks

Animal life in the sea is basically dependent upon plant life, either directly or indirectly. In many cases the larger fish prey on the smaller species which in turn may be dependent on planktonic crustacea which derive their food from microscopic algae such as diatoms. However, a few species of fish feed directly on the larger algae, and the stomach contents of three such species were examined. One of these, a Morwong, was caught on a reef off Mermaid Beach (April, 1955), and the other two, *Micracanthus strigatus* Cuv. & Val. and *Acanthurus mataides* (Cuv.), were taken at Point Danger from a lower littoral pool about eight feet deep containing abundant attached algae. The algae recovered from the stomachs of these fish and identified are as follows:—

Plectrohynchus sp. ("Morwong"). The one specimen examined contained mainly the sea lettuce, *Ulva lactuca* L.

Micracanthus strigatus ("Stripey"). Of two specimens examined, one had no gut content, but the alimentary tract of the other contained quantities of algae. *Enteromorpha* sp. constituted the bulk of this algal material but the following genera also were recognised:—*Oscillataria* sp., *Chaetomorpha* sp., *Sphacelaria* sp., *Erythratrichia* sp., *Polysiphonia* sp., diatoms.

Acanthurus mataides. The predominant algal species present in the stomach was *Enteromorpha* sp., together with fair quantities of *Ectocarpus* sp. Other identified algae present in small quantity were diatoms, *Sphacelaria* sp., *Acrachaetium* sp., *Polysiphonia* sp., and *Cladophora* sp.

The presence of large numbers of diatoms in the stomach contents of these fish does not necessarily indicate their deliberate ingestion, since many diatoms are epiphytic, and many were, in fact, found attached to the fragments of larger algae in the stomach. Similarly, some of the smaller filamentous algae present occasionally may have been taken in solely because of their close association with algae more desirable from the point of view of the fish.

From the proportions of the various algae found in the alimentary tract it seems likely that both the *Micracanthus* and *Acanthurus* showed a preference for *Enteromorpha* at the time they were taken. It is of interest to note that species of this algal genus are sold as bait for the black bream, *Girella tricuspidata* (Quoy and Gaimard), during the winter months in Queensland.

ANNUAL REPORT FOR THE YEAR 1954-55

Ladies and Gentlemen,

Your Council has pleasure in submitting the 49th Annual Report. During the year the Club has continued its usual activities.

MEETINGS—There have been 10 meetings, 9 field excursions and 10 Council meetings.

COUNCIL—Attendance at Council meetings was as follows:—Dr. E. N. Marks, 10; Miss M. Holland, Mrs. I. Waddle, 9; Dr. E. O. Marks, Messrs. S. T. Blake, K. T. Cameron, A. B. Cribb and L. S. Smith, 8; Mrs. A. B. Cribb, Mrs. W. M. Bristow, 7; Mrs. G. L. Jackson, Miss M. Hawken, 6; Mr. G. H. Barker, 4; Mr. T. E. Hunt, 1. In the absence of Miss Hawken during the last 3½ months of the year, Dr. E. N. Marks acted as Secretary.

EVENING MEETINGS—Average attendance was 46 and subjects covered many aspects of natural history, both in Australia and abroad. Excellent illustrations by colour films and slides have added to the interest and enjoyment of meetings and we are grateful to those who have loaned projectors. Dr. A. S. Roe and Miss V. Twine provided film evenings, and Miss C. Fix, Dr. E. N. Marks, Messrs. J. Mann and C. O. Dunn gave illustrated talks. At the September meeting, in addition to the usual wild flower exhibits, we were privileged to have a lecture by a distinguished Dutch botanist, Prof. H. J. Lam; the April meeting was devoted to exhibits and reports of the Easter excursion, and in June Mr. W. D. Francis delivered the fourth C. T. White Lecture. In addition, members enjoyed a film evening at Invincible Studios at the invitation of Mr. P. F. Ruckert.

Numerous members have exhibited specimens during the year, and Mr. E. J. Smith has been an outstanding contributor. The Barrier Naturalists' Club sent us for exhibit a selection of wild flowers from the Broken Hill district.

MEMBERSHIP OF THE CLUB—Honorary, 5; Ordinary, 128; Country, 24; Junior, 3; total, 161. During the year 8 new members were elected, 4 resigned and 2 died.

We regret the passing of Mr. J. H. Simmonds, senr., who had been a member of the Club almost since its foundation and was Hon. Librarian in 1929. He was a notable collector of botanical specimens, of shells and of fossil plants and insects, and contributed many exhibits to Club meetings.

We also record with sorrow the death of Mr. G. L. Jackson, who served the Club as a councillor for over 20 years, and held office as President, Vice-President and Hon. Librarian. He was a regular attender at meetings and excursions and will be greatly missed.

"THE QUEENSLAND NATURALIST"—A double number was published in September and the next issue is in the press. Suitable material is offering for more frequent issues, but the high cost of printing restricts the amount we can publish. Investigations into cheaper methods of production have not so far been successful.

LIBRARY—Many overseas publications are received in exchange for "The Queensland Naturalist." Copies of some outside the interests of Club members have been donated to the University.

EXCURSIONS—There have been 5 half-day, 1 full-day and 3 week-end outings; at 5 of these attendance was 30-40 which is most encouraging. If we could depend on a good response from members, it would be easier to organise bus trips to places of interest. Rain caused abandonment of the October excursion. The remainder were as follows: July—Birkdale

to Thornside along the shore. August—Mt. Coot-tha, inspecting the track from Wool Street and returning by the Dams. September—a week-end at the Tallebudgera National Fitness Camp, with a walk to Fleay's Fauna Reserve on Saturday, and a bus trip to Coombabah wild flower swamp on Sunday. November—a Sunday outing to Jolly's Lookout and Boombana National Park (a bus breakdown prevented our going on to Mt. Nebo as intended). February—The Queensland Museum, where Mr. Mack explained the new reptile exhibit to a large gathering. March—from the top of Samford Range to Ferny Grove. May—Mt. Gravatt. June—the Queen's Birthday week-end was spent at Camp Mt., thanks to the hospitality of Dr. and Mrs. E. O. Marks.

EASTER CAMP—In April 36 members and friends attended the camp at Springbrook, where most were accommodated in the empty Turramurra guest house. We are grateful to Mr. W. Shelley for making his building available, to Mr. C. Kurz, who made all local arrangements for us, and to Mr. Hardy for an excellent talk on early days at Springbrook. Uncertain weather somewhat marred the outing, but two interesting days were spent in the National Parks below the Purlingbrook and Twin Falls. The Council subsequently wrote to the Minister for Lands expressing appreciation of these Parks and the facilities provided for seeing them.

OTHER ACTIVITIES—Collections of native flowers were sent to the Morwell Horticultural Society and the Barrier Naturalists' Club for their shows. A botanical excursion for Mr. and Mrs. Keats of the Barrier Naturalists' Club on their visit to Brisbane was arranged with the co-operation of Miss D. Coxon and Mr. S. T. Blake.

The Council made successful representations to the appropriate authorities to prevent possible damage to Lamington National Park by the Army, to prevent the abolition of royalties on kangaroo skins, and to obtain restoration of the walking-track to Mt. Coot-tha from Wool Street. An approach has also been made to prevent dumping of rubble in the Mt. Coot-tha reserve and to ensure that native orchids sold in chain stores are not collected illegally.

Mrs. G. L. Jackson has continued to act as the Club's delegate on the Save the Trees Campaign Committee and Miss M. Holland as delegate to the International Bird Preservation Committee (Australian Branch). Miss Holland was appointed the Club's representative on the Arthur Groom Memorial Committee.

Mrs. G. L. Jackson and Dr. E. O. Marks were appointed Club delegates to a conference of interested organisations at the Burleigh Bora Ring in September and preservation of the ring is now ensured.

Mr. S. T. Blake has been appointed the Club's delegate to the Melbourne meeting of A.N.Z.A.A.S. in August, 1955.

GENERAL—We are indebted to Mrs. H. A. Longman for the gift of a large series of back numbers of "The Queensland Naturalist".

The gratitude of the Club is expressed to Mr. G. H. Barker, who has for many years looked after the Club's camping gear, and to Mr. K. T. Cameron, who has now assumed this responsibility. During the year the Club purchased the necessary materials and Mr. Cameron made several lockers for storage of the gear.

MARGARET HOLLAND, President.

ELIZABETH N. MARKS, Acting Hon. Secretary.

ANNUAL REPORT FOR THE YEAR 1955-56

Ladies and Gentlemen,

Your Council has pleasure in submitting the 50th Annual Report. On the 6th April, 1956, the Club passed another major milestone—the 50th year of its life. It is pleasing to be able to record that, despite the many obstacles that have arisen since its formation, the Club still remains an active one and during the past year has continued to engage in all of its customary activities.

MEETINGS—There have been 10 meetings and 13 field excursions. The Council held 9 meetings.

COUNCIL MEETINGS—Attendance at Council meetings was as follows:—Mr. L. S. Smith, Miss M. Hawken, 9; Miss M. Holland, Mrs. I. Waddle, 8; Mr. F. S. Colliver, Mr. A. B. Cribb, Mr. E. J. Smith, 7; Dr. E. N. Marks, Mrs. A. B. Cribb, Mr. S. T. Blake, Mr. K. T. Cameron, 6; Mrs. E. M. Jackson, 3; Mr. T. E. Hunt, 1.

EVENING MEETINGS—Attendance at evening meetings has averaged 47 and ranged up to 78 members. Lectures throughout the year have catered for a variety of interests and the majority were illustrated by Kodachrome transparencies. Illustrated talks on the subjects indicated were given by Dr. H. E. Young (Ceylon), Messrs. G. H. Barker (Birds of the Riverina), R. Endean (Echinoderms), J. Mann (Mexico), and J. T. Woods (A Collecting Trip to Central Queensland). Mr. Mann also showed a film prepared by the Department of Public Lands showing the conquest of prickly-pear. Mr. K. B. Walker gave an address on the birds of the Darling Downs. The final meeting for 1955 was devoted to the showing of Kodachromes of natural history and taken by Club members. At the September meeting, one of the most extensive collections of wildflowers seen for some years was tabled. This included a contribution received from the Barrier Naturalists' Club, Broken Hill.

Exhibits of specimens, varied in nature, have been numerous throughout the year, and have contributed to the interest of meetings.

50th ANNIVERSARY MEETING—To mark the occasion of the Club's 50th Anniversary, at the April meeting, Mr. J. Cossar Smith delivered the fifth C. T. White Memorial Lecture entitled "Our first fifty years." This was illustrated by the display of early photographs. Further, to focus attention on the published work of the Club, a manuscript copy of an index to the Queensland Naturalist, prepared by four members of the Council, was tabled. On this occasion we were happy to welcome a number of early members, including a Foundation Member, Mr. J. C. McMinn. Supper, at which an anniversary cake was cut, terminated the evening.

EXCURSIONS—In an unusually wet year, we were fortunate to hold 13 excursions and have good weather for most of them. The attendance of school children has been noted with particular pleasure because early encouragement of a love of nature is one of our aims.

Full-day Saturday outings, which enabled us to reach more interesting areas, were the most popular. Transport for these remain a problem. The number requiring it makes hire of a bus a financial hazard. On two outings, private cars could have seated the whole party, yet an attempt to organize transport by this means for one of them proved unsuccessful. Apparently some car-owners do not decide to attend until the day of the excursion.

Attendance at the five half-day excursions averaged 17. These were held as follows:—In July to Clontarf, where a jabiru was seen; in August to Albion quarry to view the dinosaur footprints; in October to Brighton reserve, where we found the ranger, Mr. Franklin, doing a good job in protecting this accessible area of bushland; in February to the University Department of Geology, St. Lucia; in March to Sherwood Arboretum, where

Mr. Steenbom explained City Council plans for its development and Mrs. Bristaw entertained members to afternoon tea at her home nearby.

Full-day excursions, at which attendance averaged 28, comprised four Saturday excursions, namely—in September to Beerwah where wildflowers were plentiful; in November to Mr. M. Haysom's delightful property at Kenmore; in April to Burpengary scenic reserve; in May, a walk from Indooroopilly to Mt. Coot-tha and down to Bardon, which allowed members to join or leave the party at midday. One Sunday excursion was held to Gold Creek in June.

There were two week-end excursions. The highlight of the year's outings, for the 16 present, was the one at Dunwich in October, arranged and led by Professor Stephenson, who gave us an absorbing introduction to the study of marine biology. In June, 19 spent the Queen's Birthday week-end at Montville.

An enjoyable Easter camp was held at Mooloolaba, where we rented a large house which, with outbuildings, accommodated 27. On outings to Point Cartwright, the Mooloolah River, and the foothills of Buderim Mountain, six other members joined us. Evening entertainment was provided by several members showing Kodachromes.

As usual a small surplus of money was collected on the longer excursions. This has been used or put aside for purchase and repair of camping gear.

MEMBERSHIP—Present membership of the Club comprises: Honorary, 6; Ordinary, 132; Country, 23; Junior, 4; total 165. During the year 19 new members were elected, 6 resigned, 1 died, and 5 names were struck off for prolonged non-payment of subscriptions. We regret the passing of Mr. Herbert Curtis, of North Tamborine, and extend our sympathy to Mrs. Curtis. Both have been country members for many years.

"THE QUEENSLAND NATURALIST"—One issue, Vol. 15, No. 3, was published in August, and the Editor is well advanced with the preparation of a triple number which should go to press very shortly. The high cost of printing continues to exert a restraining influence on the rate of publication.

LIBRARY—Many publications continue to be received by the Club in exchange for the "Queensland Naturalist". Partly owing to the much-regretted and prolonged illness of the Librarian, it was not possible to offer normal library facilities for part of the year. However, a Library Committee has been recently reconstituted to assist the Librarian temporarily and review present library arrangements.

GENERAL—Representations were made to the appropriate authorities protesting against the granting of an application for a mining lease taking in part of the Currumbin Bird Sanctuary. This application was subsequently withdrawn.

Following an approach by the Club the Forestry Department has made arrangements for suitable notices to be erected to deter passers-by from picking Christmas Bells and other wildflowers from a wildflower flat beside the Golden Beach Road, Noosa.

Collections of native flowers were sent to the Barrier Naturalists' Club, Broken Hill, and the Burnie Naturalists' Club, Tasmania, for exhibit at their wildflower shows. We are grateful to Miss D. Caxon for her work in this connection.

Three members accompanied a group of Girl Guides to Mt. Coot-tha, pointing out objects of natural history interest.

The nomination of Mr. S. R. Mitchell for the Natural History Medallion for 1955 was supported by the Club, and he subsequently received the award.

To all who have assisted in one way or another during the year, we extend our thanks.

L. S. SMITH, President.

MARGARET HOLLAND, Secretary.

PROCEEDINGS

EVENING MEETING, 23rd Aug., 1954—Dr. E. O. Marks reported on the excursion to the Mt. Coot-tha reserve on 21st August, when the Wool Street walking track, which had recently been partly covered by quarrying operations, was inspected. It was resolved that the City Council be approached to see that the track is kept clear. Mr. T. E. Hunt delivered his postponed Presidential Address, "The identification of orchids", illustrated by coloured diagrams. The following were amongst the exhibits tabled:—Double **Leptospermum**—Mrs. H. White; banana weevil borer and larva—Mr. T. E. Hunt.

EVENING MEETING, 20th September, 1954—Reports were given on the week-end excursion to Tallebudgera attended by about 30 members. Dr. E. O. Marks reported the rocks of the area as mainly Brisbane schists with some larva flaws; nests of two of the 54 species of birds seen, the little friar bird and the variegated wren, were noted by Miss M. Holland; Mr. L. S. Smith reported pink **Callistemon** in flower in the Coombaba swamp; Dr. E. N. Marks drew attention to the very large number of phantom gnats which could exist in a small amount of water. Professor H. J. Lam, Director of the State Herbarium and Professor of Botany, Leiden University, Holland, spoke about and showed slides of some of the topographical and botanical features of Dutch New Guinea. Mr. J. C. Jones and Miss E. Bennett were elected to ordinary membership. A collection of wild flowers from the Barrier Naturalists' Club was exhibited, and Mr. E. J. Smith tabled the skull and jaws of a jew lizard, pellets from the boiled head of a sugar squirrel, and the case of a ribbed case moth.

EVENING MEETING, 19th October, 1954—Dr. A. S. Roe showed his interesting colour film on birds. The following were amongst the exhibits tabled:—Jaws of crucifix catfish, heart urchin, and sail fish—Mr. E. J. Smith; egg sac of Magnificent spider—Miss M. Holland; botanical specimens—Mrs. W. M. Bristow.

EVENING MEETING, 15th November, 1954—Members reported on the excursion to Jolly's Lookout and Baombana National Park on 14th Nov.: Mrs. W. M. Bristow gave an account of the botanical specimens seen, and Miss M. Holland reported a crested hawk and a colony of bell birds. Miss C. Fix, a Fullbright Scholar, showed coloured slides and spoke on national parks in the U.S.A. Mr. C. O. Dunn raised the matter of the sale of native orchids in some chain stores and asked the Council of the Club to take some appropriate action. The following were amongst the exhibits:—American native handicrafts—Miss C. Fix; foraminifera and radiolarians—Mr. F. S. Colliver; a land shell and a fungus—Mr. E. J. Smith; botanical specimens—Mrs. W. M. Bristow. Supper was served.

EVENING MEETING, 21st February, 1955—A report was received on the excursion on 19th Feb. to the Museum, where Mr. G. Mack gave a talk on the recently arranged exhibit of snakes and reptiles. Mr. J. Mann gave a talk on and showed slides of Mexico, which he had visited recently to search for **Lantana** control insects. Mr. C. O. Dunn exhibited some slides of Springbrook. The following were amongst the exhibits tabled:—a recently completed 40-mile geological survey map of Queensland—Mr. F. S. Colliver; the woody pear, **Xylomelum pyriforme**—Mrs. W. M. Bristow; zoological specimens, including an ogre-faced spider, stomach stones from a fresh-water yabbie, and pistol prawn—Mr. E. J. Smith.

EVENING MEETING, 21st March, 1955—Members reported on the excursion on 19th March from the top of Samford Range to Ferny Grove: Dr. E. O. Marks reported that the rocks were schist, part of the Brisbane metamorphics of which the age is unknown, except that they are very ancient; Mr. L. S. Smith reported a form of **Glycine clandestina** with a pure white flower, and said that the fungi, including the large white death-cup fungus, **Amanita verna**, were numerous; Miss M. Holland noted a variegated wren; Dr. E. N. Marks found the rare **Aedes subauridarsum** amongst the species of mosquitoes. Mr. W. Edmiston was elected to

ordinary membership. Mr. C. O. Dunn addressed the meeting on orchids and wild flowers, illustrating his lecture with coloured slides. The following were amongst the exhibits:—Various snails from overseas and flint stones from chalk formation near Bath, England—Miss D. Williams (Mr. F. S. Colliver commented that flint does not occur in Australia, but South Australian aborigines used flint implements made from English flints brought out as ballast in tea clippers); skull and jaws of the lung fish, *Neoceratodus forsteri*, and fossil lung fish teeth from the Jurassic strata in England—Mr. F. S. Colliver; cone of *Mocrozomia*, a recently hatched green tree snake, skull of a ring-tail possum, bubble shell, and common opal from a quarry at Buderim—Mr. E. J. Smith.

EVENING MEETING, 18th April, 1955—The meeting was devoted to reports on the Easter camp held in the empty Turramurra guest house at Springbrook, and attended by 35 members: Dr. E. O. Marks said that in the district there was a basement of greywacke (i.e., sandstone of rock fragments other than quartz cemented together) very ancient and crumpled, and laid on this were Mesozoic coalmeasure strata on top of which were tertiary volcanic rocks of several types; Miss D. Coxon reported the striated and the brown thornbill, lyrebirds (heard imitating a king parrot and grey thrush), a scrub turkey and a female cicada bird; Dr. E. N. Marks spoke of the glow-worms in roadside banks near the camp; Mr. A. B. Cribb reported two main types of vegetation, the rain-forest, most of which has now been cleared, on the red volcanic soil, and a light scrub dominated by *Acacia melanoxydon* in poorer soil near the cliff face; Mrs. A. B. Cribb exhibited several fungi collected on the excursion, including the largest truffle so far found in Queensland; Mr. C. O. Dunn listed 26 species of orchids. Mrs. J. Taylor was elected to ordinary membership.

EVENING MEETING, 16th May, 1955—Reports were received on the excursion to Mt. Gravatt on 14th May: Mr. F. S. Colliver pointed out that weathering of the quartzite on Mt. Gravatt had produced a scree slope cemented by clay, and in this the caves had been formed; Miss D. Coxon reported currawongs and rosellas at the summit; Mr. E. J. Smith reminded members that Mt. Gravatt was named after the last Commandant of the Moreton Bay penal settlement, Lt. George Gravatt. Master D. Hoffman was elected to junior membership. Miss V. Twine showed four colour films, one of them dealing with the Carnarvon Range. The following were amongst the exhibits:—A wingless fly, *Cyclopodia pteropus*, parasitic on a flying fox, and "lace coral" from Caloundra—Mr. E. J. Smith; fossil fresh-water fish, *Leptolepis gregorus* from Talbragar, N.S.W.—Mr. F. S. Colliver; botanical specimens—Mrs. W. M. Bristow.

EVENING MEETING, 20th June, 1955—Reports were received on the excursion to Camp Mt., where members enjoyed the hospitality of Dr. and Mrs. E. N. Marks. The fourth C. T. White Memorial Lecture was delivered by Mr. W. D. Francis, former Government Botanist, on "Australian Stinging Trees". Mr. F. S. Colliver spoke of the recent discoveries of fossil footprints in Albion quarry.

EVENING MEETING, 18th July, 1955—Mr. G. H. Barker, an active member of the Club for 47 years, was elected an honorary member of the Club. Members reported on the excursion to Clontarf on 16th July: Dr. E. N. Marks reported representatives of three families of flies breeding in water-holding cavities in the mangroves; Miss M. Hawken said that about 14 species of birds, including a Jabiru, were seen; Mr. E. J. Smith spoke of the kitchen midden examined. The annual report, annual balance sheet, auditors report and report of the Save the Trees Campaign delegate were presented. Election of officers resulted as shown on the inside front cover. Miss M. Holland delivered her Presidential address entitled "Charles Waterton, nineteenth century naturalist".

Members stood as a mark of respect for Mr. G. L. Jackson who passed away on 6th July. Mr. Jackson had served on the Council for many years and was a past President.

INDEX

TO

THE QUEENSLAND NATURALIST

VOLS. 1 TO 15

This index was prepared to commemorate the 50th Anniversary of the Club, which was celebrated at the evening meeting held on the 16th April, 1956. It was tabled at that meeting and is the joint work of the then President, Mr. L. S. Smith; the Hon. Secretary, Miss M. Holland; the Excursion Secretary, Dr. E. N. Marks and Mr. S. T. Blake. Mrs. Smith also assisted with much of the necessary checking. It is hoped that the index will make more readily accessible and bring to the notice of members the many interesting notes and papers which have already appeared in the pages of our Journal.

Contributions towards the cost of publication were made by a number of members of the Club. These are gratefully acknowledged.

Editor.

NOTES

The index is in two parts, a subject-index and an author-index. In the latter, titles of papers, notes, reports, etc., are listed chronologically under the author. Titles have been abbreviated or modified slightly in some cases to save space.

In Vol. 14, page numbers 1 to 20 were used again in part No. 5. The correct pagination was given in part No. 6. However, in this index, the duplicated page numbers are used and are preceded by the part number in brackets, i.e. (5).

A number of common geographical terms have been abbreviated, e.g., Ck., creek; I./-s., island/-s; Mt./-n./-s., Mount/-ain/-ains; N., north/ern; R., river; Ra., range; S.E., south-east/ern; etc. In addition to these Aust./n. is used for Australia/-n, exc./-s. for excursion/-s, and Qd. for Queensland.

The occurrence of one or more illustrations is indicated by the abbreviation - f. This immediately follows the page reference to the subject or paper, except when there is a series of references, all of which are illustrated. It is then placed at the end of the series and preceded by a full stop instead of the usual comma.

The following abbreviations are used in association with latinized names of plants and animals or groups:—n. comb., new combination; n. g., new genus; n. rec., new record for Queensland; n. sp., new species; n. ssp., new subspecies; n. var., new variety.

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